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ON more than one occasion we have urged our young readers to lose no opportunity, during the long days, of seeing such works of nature and of art as are accessible to them. We have said, and we say again, see all the finest buildings, and the grandest views, and the best pictures you can get at: by accustoming the eye to what is good, it will be gradually led to reject what is bad. When you have a leisure day get off to some of the old churches near you, or to one of our cathedrals, and fill your note-book and your sketch-book with records of what you see and what you think: such jaunts invigorate the body, give tone to the mind, and enlarge the store of materials on which it may afterwards work. Professionally, too, it is of the utmost importance that we should see what the best masters of our art have done, so that we may begin where they have left off. The dwarf on the giant's shoulders sees farther than the giant. "In every pursuit of art or science," said the late Sir Martin Shee, in one of his addresses to the Academy,* "it is essential that we should, as early as possible, make ourselves acquainted with what has been done by those who have preceded us in the same career. If we neglect this, we invariably over-estimate our attainments;—we forfeit all the advantages which result from the accumulated experience of ages, and fancy that we have made great progress in our journey before we have achieved even its first stage.

"In the arts of imitation, particularly, the acquisition of this previous knowledge is of the utmost importance. In the darkness of ignorance, the first dawn of talent appears to be broad day; and the manufacturer of a wig block, who has never seen a higher effort of sculpture, will consider himself a skilful artist. When we have clearly ascertained, by the contemplation of celebrated works, all that the powers of genius have been competent to perform, we see at once what is required of us—we see what is attainable in that which has been attained. We are no longer satisfied with the slow pace of individual progress, but prepare to move on with the great collective mass of talent. The mist of self-delusion is dispelled, and we measure ourselves by a standard that reduces us to our proper dimensions."

We had a few hours to spare the other day in Somersetshire, during the pause of a business, and a good-natured friend who knows we practise what we preach in this respect, and are always anxious to see, however slightly we may be able to profit by what we see,—offered us the means of refreshing our recollections of Chepstow and Tintern. Shakspeare supplied us with an answer,—"We greet thy love,—not with vain thanks, but with *acceptance* bounteous, and will *upon the instant* put thee to it." And so in half an hour we were off, rattling through part of Gloucestershire to the Aust passage, where a boat took us across the Severn to the Monmouth side, not without convolutions, to avoid the current, sufficient to make a bad sailor wish that the projected bridge here had been carried out. The most difficult part of such a work would probably be to obtain a sufficient return, in a pecuniary sense, for the money expended.

Chepstow, as most of our readers will recollect, is on the Wye, near where that river enters the Severn, and it is the close neighbourhood of these two streams which renders the views around so singularly beautiful as they are. That from the Windcliff, for example (justly celebrated), is equal to any thing of its kind in or out of England,—a glorious combination of cliff and cleft, wood and water. There is a natural amphitheatre of hills here, tree-covered, and the Wye steals round the inner circumference; beyond is the Severn, and far away in the distance are the Cotswold hills,—

——"Dusk, yet clear;
Mellow'd and mingling, yet distinctly seen."

An extensive view is not without a saddening effect on the mind,—a saddening which chastens. Southey has touched one source of this feeling where he says:—

——"When I have gazed
From some high eminence on goodly vales,
And cots, and villages, embowered below,
The thought would rise that all to me was strange
Amid the scene so fair, not one small spot
Where my tired mind might rest and call it
Home!"

Tintern Abbey is about seven miles from Chepstow, also on the Wye, and, like the other Cistercian abbeys, is in a beautiful valley. As Byron says of Newstead,—

——"It lies a little low,
Because the monks preferr'd a hill behind,
To shelter their devotion from the wind."

Like all the churches of Cistercian abbeys, Tintern is dedicated to St. Mary, and is in plan a Latin cross. The roof and low tower at the crossing have fallen, but the rest of the building remains in a fair state. The abbey was founded in 1131, but the style of the remains of the church is the Geometrical, or what used to be called Early Decorated, and they are to be ascribed, therefore, to the latter part of the 13th century.* It is all of the same period and accordant; the west window is very beautiful,† and so, indeed, are all the details. It is distressing to see so fine a building roofless and exposed:—

"And questionless here, in these open courts
Which now lie naked to the injuries
Of stormy weather, some men lie interr'd
Who lov'd the church so well and gave so largely to't,
They thought it would have canopied their bones
Till Domesday. But all things have an end.
Churches and cities that have diseases like to men
Must have like death that we have."

The east window has disappeared;—as we are in a quoting mood we might say with a poet mentioned just now,—that

"A mighty window, hollow in the centre,
Shorn of its glass of thousand colourings,
Through which the deepened glories once could enter,
Streaming from off the sun like seraphs' wings,
Now yawns all desolate:"—

but if Mr. Sharpe be correct in the remarks made in his recent excellent paper on Furness Abbey,‡ the glass was probably not painted. In many other respects, the asserted characteristics of Cistercian buildings are borne out by Tintern. There are no sculptured figures; and the chapter-house, the refectory, the hospitium, or guest-house, &c., all follow the usual arrangement. The apartment which we suppose to be the hospitium is 85 feet long and 28 feet broad, and has, like that at Furness, a central range of columns to carry the vaulting. The refectory, which is 84 feet long and 34 feet wide, has in the centre of the west side a vaulted and groined niche, as a reading plac about three feet above the floor of the apartment.* The buttery-hatch remains. In the north transept of the church, the flight of steps may be seen which communicated with the domestic portions of the establishment, and enabled the monks to visit the church without going into the air.

The width of the nave of the church, inside the walls, with the two aisles, is 75 feet 2 inches; each aisle is exactly half the width of the central space. The whole length of the church, inside, is 228 feet, or three times the width. The transept has an aisle on the east side only (as at Furness, Fountains, and other places), which was formed into chapels. The width of the transept, including the aisle, is 53 feet 10 inches, and the extent from north to south is 151 feet 2 inches, or again nearly three times the width. The church is peculiar in this, that there was a low stone wall connecting the main columns of the nave and chancel, so as to cut off the aisles. The height of the nave to the vaulting was 66 feet, but there was a chamber above this: and the height of the west-front externally is nearly 100 feet.†

A portion of the original tile-paving remains in the south aisle of nave, and includes some very good patterns, most of which, however, have been engraved. It is suffering from weather, and should have a penthouse covering. There are two very interesting crosses, also, just outside the church, which are much injured through lying in a gangway. They are of the fourteenth century: one of them, inscribed, *Jacet Henricvs de Lancavt qvandam abbas de voto*, has a pastoral staff.‡ There are several other monumental slabs scattered about,—further evidences of the wonderful variety with which the mediæval sculptors expressed their one leading idea in such works,—the cross.

Tintern Abbey, as well as Ragland Castle, Chepstow Castle, &c., belongs to the Duke of Beaufort,§ and it is gratifying to learn that his Grace manifests a laudable anxiety for the preservation of these interesting specimens of our ancestors' architectural skill.

Chepstow Castle has several points of interest: the earlier portions of it, including the lower story of what is called the chapel, are of the Norman period, but the insertions and additions of a later date over-ride these. There is an almery in the chapel; one of the chimney shafts deserves notice; and the battlements of the keep show carved figures, rising out of the merlons,‖ as at Alnwick. The ruins occupy an extensive area, and are situated most picturesquely.

Remembering that Rickman calls Chepstow Church "a very fine specimen of good Norman," we expected more than we found there. And yet Rickman may have been right, for the church has been restored in most prosaic fashion, and now exhibits little to interest the student. It is a cross church of considerable size: the lower part of the tower, Norman in style, is open, and forms a porch to the west entrance. The interior of the church, with its flat drawing-room ceiling, and huge wooden *quasi* Norman pulpit, is very unsatisfactory.

* December 10, 1837.

* Mass was first celebrated in it in 1268.

† This window is about 40 feet high and 25 feet wide.

‡ See page 422, *ante*.

* Our readers will remember the pulpit, or reading place, in the refectory at Chester Cathedral, engraved in a previous volume.

† Tintern is very fully and admirably illustrated in Sharpe's "Architectural Parallels." The west entrance to the church is divided into two archways, under a circumscribing arch, and presents in the spandril over the central column, the *vesica piscis*.

‡ These slabs are engraved in Mr. Cutts's "Manual for the Study of Sepulchral Slabs."

§ It was granted in the 28th of Henry VIII. to Henry, the second Earl of Worcester.

‖ The rising parts of a battlement. The spaces are called *embrasures*, or *loops*.

But we intended gossipping, not grumbling, and so will here close a brief record of a pleasant trip.

SOME CONTRIBUTIONS TO THE ELUCIDATION OF THE CONSTRUCTIVE DETAILS OF SANITARY ARCHITECTURE.

THE sanitary movement is undoubtedly one of the most important social questions of the age; for some years it has taken up the attention of our legislators and philanthropists; a large mass of evidence has been industriously collected, and there has been presented an amount of proof "altogether irresistible," of the necessity there is for some practical measures to be introduced. And since it has been fully proved that the present state of matters cannot exist without incurring danger to our social condition, men eminent in their respective professions have begun to direct their attention to the carrying out of efficient remedies. Architects and engineers consider the question as closely connected with their professions, and look upon the field thus opened up to them as one of immense importance. The present state of society and the force of public opinion demand imperatively from them, "as absolute and indispensable arrangements, all those combinations commensurate with the claims of humanity," and it is by their "professional skill and experience that such measures can alone be effectively realized."

With very few exceptions, it has been the practice to "run up" structures without the slightest regard to the *real* comfort of the inhabitants. Healthy structural arrangements are, however, fast becoming to be considered as of paramount importance; and as, in all likelihood, legislative enactments will soon be enforced for carrying them in every case into effect, it has become a matter of necessity with builders, &c., to have a clear understanding as to the requisites for such improvements.

With a view to assist practical men in considering the improvements to be adopted in some of the various cases that may be presented to them, the following remarks have been drawn up:—

Before entering into the consideration of other matters, it may not be amiss to notice, very briefly, the importance of a good supply of light, with reference to the health of the inhabitants of houses, and the necessity there is for particular attention being paid to this point. Such remarks may be, by some, considered as altogether unnecessary. Parties are rather apt to blame the window-tax, as being the cause of all sins of omission and commission on this head. That there is truth in this statement, a glance at many of the houses around us, both in town and country, will amply prove. But it is not always so. Else why should window arrangements be made in such a way as to exclude a large portion of the light, which would otherwise be available? We could point out several houses, otherwise well arranged, in a great degree spoiled, gloomy, and cheerless, even when the sun is up, by the clumsy and ill-devised arrangement and construction of the windows. The slightest contrivance (of course, first prompted by a knowledge of the importance of a good supply of light) would easily have obviated this, and rendered the houses in every way faultless. We are now writing in a district not many dozen miles from a house the construction of which cost no less a sum than 32,000*l.*; and yet, would it be believed that the entrance-hall is so clumsily lighted that in broad day it is a matter of difficulty to distinguish its extent or the objects placed in it! And a handsome corridor is completely spoiled from the want of effective light. In one large establishment the whole range of servants' rooms was miserably lighted, by windows, mere pigeon-holes; and the sills so high from the floor that no one sitting could take advantage of a very delightful external prospect. But the same fault can be found with numerous houses—where the sitting-rooms are completely spoiled from high, small windows. Certainly the architects and builders who can commit such blunders can have no very clear idea of the importance, in a sanitary point of view, of a good supply of light, as we cannot conceive of their sinning willingly against the light of reason.

The result of the investigations on the subject of light has proved, that a close and intimate connexion exists between it and the performances of the higher functions of animal and vegetable existence. Plant a pea, for instance, in a dark cellar, what is the consequence? It takes root, and grows doubtless; but the shoots it throws out, are they vigorous, and possessed of that healthy green colour, the effect of the existence of healthy juices? No! pale and sickly the plant droops, growing still, but never arriving at fructifying maturity. As with vegetable, so with animal life: in many of our large towns are dark cellars and rooms, lanes, and alleys, in which the glorious light of day never enters, and which are inhabited by wretched beings,—the grown up, pale and sickly,—the young, stunted and deformed. Dupytren, a celebrated continental physician, mentions the case of a French lady whose disease baffled the skill of the most eminent medical men. This lady resided in a dark room, in which the sun never shone, in one of the narrow streets of Paris. After a careful examination Dupytren was led to refer her complaint to the absence of light, and recommended her removal to a more cheerful situation: the change was attended with the most beneficial results—all her complaints vanished. Returning to our illustration of the pea: in the cellar wall make an aperture admitting light; however distant the plant may be from this, it will instinctively draw near it, and on reaching it fresh green leaves will soon appear. And so in the case of hundreds of our fellow countrymen, who live almost without light; supply them with it, and many of their diseases will disappear. Certain it is that deficient light is a powerfully predisposing cause of disease and sickness.

We have already shown that there is room for improvement in the placing and construction of windows of the houses of the better sort. It is, however, in connection with those of the labouring classes that improvements are most desiderable. In such places the requisites (of windows) to be considered are—cheapness of original cost, and easy repair of the frames when broken. Cast-iron frames seem to possess superior advantages over other materials; but strong galvanised iron may also be used with advantage. It would be well if a certain size of square could be universally adopted for certain sizes of frame for the houses of the labouring classes. One very obvious advantage of such an arrangement would be, that the exact size of glass would be manufactured; and being easily obtainable at a low rate, could be fastened in by the owner or occupier of the tenement, without the aid of a special workman. At present, "when glass is broken, recourse is had to the most unseemly substitutes; these may annoy the inmate at first, but he soon becomes habituated to them; one eyesore prepares him for another, and in a short time the same slovenliness and disorder spread over the whole establishment." In remodelling old tenements, we should recommend the owners to consider whether the plan of inserting cheap durable frames which could be kept up at small cost, would not be more economical than repairing the old cumbersome and expensive ones we too often see in these times of improvement. It would be well for mechanics to turn their attention to the improvement of this department, to the bringing out of a plan at once cheap in original cost, and easily maintained in repair. The fate of the abominable window-tax is, we believe, sealed; its abolition is now a mere question of time.

Pure and sparkling to the eye, agreeable to the taste, nourishing to the body, *water*, whether it murmurs in our country brooks and streamlets, flows in crystal streams in our inland rivers, gushes forth clear, cool, and bright from the hidden springs in rocky beds, or spreads itself out in liquid mirrors in the ponds and lakes of our inland solitudes, is one of the most precious gifts a beneficent God has given to man—a gift, the rare value of which cannot be over-estimated; and whether it be considered as a means of sustaining life, or as conducive to habits of cleanliness, a pure and plentiful supply to the inhabitants of our dwelling-places is absolutely necessary. Considered as an aliment, water forms an important constituent in the food of man; without it life languishes, and death arising from its want is one the sufferings and agonies of which are horrible in the extreme. The supply of water being in many of our towns notoriously deficient, is the cause of many evils, both physical and moral; habits of uncleanliness amongst the poorer classes, both personal and domestic, are induced, which lead to recklessness, dissipation, and crime. It is a melancholy and striking fact, that in those districts in which uncleanliness is most prevalent, solely from want of water, crime most abounds, and not only so, but disease in their filthy unwashed hovels is never absent.

From the agitation on the subject we hope to see the day when water shall be as plentifully supplied to the habitations of all classes throughout the kingdom as it is in the hills and chalk basins, valley streams, and mountain reservoirs, placed there for beneficent purposes, but to obtain which that labour demanded of all men must be first expended. And for no nobler and more useful purpose can such labour be bestowed. The benefits resulting from copious supplies of water need not be here enumerated, they are sufficiently obvious to all; but in connection with another important branch of sanitary improvement, the great value of such must not be overlooked. We refer to the efficient working of our drains and sewers. However efficient these may be in point of position and construction, it is evident that without an easily obtained supply of liquid, by which their contents can be removed, they cannot fail but to be almost totally worthless. Water, no matter whether "fair or foul," is the only sure and economical vehicle by which the matter from the houses can be speedily carried off. On this subject more hereafter.

The movements of all public bodies, legislative or otherwise, are proverbially slow and tedious, so that it will likely be some time ere we shall have the pleasure of seeing every house, no matter how low in the scale of society its inhabitants may be, provided with unlimited supplies of pure and wholesome water. In the meantime all means should be taken, not only for the economisation of the limited supplies which may be given to us, but also for taking advantage of that which Nature grants to all equally, whether rich or poor, "the just as well as the unjust,"—"rain-water." It is a notorious fact, that while the inhabitants of large and populous towns are maintaining lustily that they are wofully stinted in their supply of water, they allow to run to waste gallons upon gallons of valuable soft rain-water, without a single effort to retain a drop, while the inhabitants of other towns, "wiser in their day and generation," use all available means to catch and retain the descending showers. These are not designed to be regarded as useless, but are sent to fulfil important purposes—not less useful in the hard paved streets of our crowded towns, than in the plains and fields of our suburban districts. We have heard such woful waste justified, on the ground that the rain was allowed to run into the drains to cleanse and flush them. But it certainly is obvious that the same effect can be much better obtained by first using the water for domestic purposes, and thereafter sending it down properly-constructed openings, connected with efficient drains and sewers.

In the majority of cases, where tanks, cisterns, or barrels are used for the reception of the rain water, they are left open on purpose, as it were, to receive the decomposing and carbonaceous matters which generally float in the atmosphere above large towns. If a sheet of white calico be placed in the open air in a still day, in the midst of a densely populated manufacturing town, in a short space of time its whole surface will be found covered with sooty particles. Now this process is going on daily, and any one looking into the cisterns in the back yards of the houses in Manchester, Stockport, &c., will see a pretty thick layer of soot reposing on the surface of the water. Not content, then, with the matters which the water has taken up, in its passage through a sooty atmosphere, or over a sooty roof, the tanks or receptacles are left open, and no provision whatever is made for freeing the water by filtration from the particles thus imparted to it. It really is lamentable to think

that in this age of boasted improvements such an absurd arrangement is allowed to be carried into practice, without a trial being made to improve it. Were the desideratum to obtain water impregnated with sooty particles, we could not use more efficient means. To place a cover on the tanks would, to a certain extent, obviate the difficulty, but the surface of the tank for receiving water would then be lost. The next and most satisfactory method would be the adoption of some simple means of filtering. But the expense of this would be at once objected to: nevertheless, it would be easy to show that the original expense would be soon repaid. It would be a very amusing, if not altogether useful, task to calculate the waste of money occasioned by the filthy state of rain water, especially in the towns of Manchester and Stockport alone. To purify in some measure the disgustingly filthy water obtained from the cisterns, especially after or during rainy weather, flour is sprinkled in it, which carries the contained impurities to the bottom. This is one item of loss; others might be mentioned. Rain water from the heavens is the purest we can obtain; it is then the wisest course to fit up receptacles, by which this may be collected and kept as pure and uncontaminated as possible for the many domestic purposes for which it is so well adapted. We believe that such a contrivance can be cheaply fitted up to every house, and that the important advantages derived therefrom would be beneficial in many points of view. People are, however, very apt to say, "Oh, the amount obtained yearly is of such small extent as not to be worthy of the expense of collecting." "Now, there is nothing," as brother Jonathan says, "like cyphering." Mr. Dempsey says, "the roof of a house of the average dimensions of 20 feet square, presenting a plane surface of 400 square feet, receives at least 800 cubic feet of rain water annually, or about 4,800 gallons." Now this quantity is equivalent to nearly 13½ gallons per day. We really wish every house in the kingdom had such a supply. But allowing only one half of this to be obtained, surely a sufficiently liberal estimate, it is certainly worth the collecting. The same writer says—"If well constructed and capacious gutters are provided, this quantity may be collected with little loss from evaporation, and will form a reserve stock for such special household purposes as it is specially adapted for. This quantity should be immediately received in a filtering tank, and the best available method be adopted of purifying it from the carbonaceous matter with which it becomes saturated in passing through a smoky atmosphere, and flowing over roof surfaces covered with a deposit of similar impurity. An economical and well-devised apparatus for effecting this purpose, and applicable to private and public buildings of all classes, is a desideratum yet wanting in the economical supply of water." As a slight contribution to the attempt to obtain such a valuable desideratum, we offer the following hints:—It must be an essential point in the construction of such a contrivance, that no lead shall be used in parts where the water is allowed to remain in, or even pass through. Slate is an admirable material, but it is heavy and cumbersome. Perhaps gutta percha would answer. A large cistern lined with this material will last a long time, will be cheap, and not in the slightest degree will it deteriorate the water. The pipes also by which the water is led to the interior of the house may also be made of this material. If the rain water is made to pass through filtering material made with coarse pounded charcoal and coarse gravel, it is "fitted for the use of the table, and from its solvent powers it makes tea admirably, with a saving of that commodity." A good filtering apparatus must be attached to the cistern. To allow of the water entering by the open surface of the tank or cistern, without exposing it to the following soot, a cover should be made, either of coarse canvass, wire gauze, or small perforated zinc plates. A wooden box should be made to fit loosely into the top part of the cistern, or it may lie on the outside edges; this box is provided with a perforated zinc bottom, a layer of coarse gravel is made to lie on this, in the inside of the box; above this, a layer of coarse pounded charcoal, then another layer of gravel similar to the first. A perforated zinc covering stretches across the whole surface of the box; this not only prevents mechanical impurities from mixing with the water, but tends to diffuse the water (gushing from the pipe leading from the roof) over the surface: the water not gaining immediate admittance by the small holes beneath the pipe, is spread over the whole surface of zinc, and permeates through the body of the filtering material at all points. The filtering box, instead of being placed across the whole surface of the cistern, may be confined to one end only, but it will require to be made deeper; this, however, will not be of great consequence, as, if the whole water from the roof is made to pass through it, it matters not whether the lower portion of the filtering-box should dip into the water in the body of the cistern. If the box is confined to part of the surface only, a strainer cover should be stretched over the whole surface of the cistern. If the contrivance we have thus indicated should be objected to, on the score of expense, let the pipe from the large cistern communicate with the inside of a box provided with filtering material, this box hanging clear in the inside of an outer case, the filtered water being drawn off by a pipe below. This simple and efficient contrivance may be put in a corner of the scullery near the sink or slop stone; it may be made of zinc, to hold any requisite quantity of filtered water; the water from the cistern may be allowed to run slowly, yet continually, through a crane attached to the pipe leading from the cistern, so that the supply of filtered water may be kept up.

Rain-water may be retained for the purpose of flushing the drains, if not for domestic purposes. Mr. W. D. Guthrie was the first to propose a contrivance for this purpose. It consisted of a conical-shaped cistern, having, at its lower extremity, a valve opening into a pipe which led to the drain. A lever was fastened on one end of the cistern, and one end connected with the valve by a chain; by pulling down the end of the lever outside by a cord, the valve was lifted out of its seat, and the contained water in the cistern rushed down the pipe, effectually cleansing the drains. The surplus water of the cistern ran down by a pipe connected with the pipe leading to the drain, a little below the seat of the conical valve. This latter arrangement was defective, in so much as the gases of the drain had access to the atmosphere through the pipe. Mr. Hosmer's cistern could be adopted with advantage for such purposes. It "has a partition dividing it into two spaces, one considerably larger than the other, and containing the supply for domestic use, while the smaller space is intended to contain a reserve for cleansing the drains and sewers. A two-way cock is fitted in the cistern with ball and lever, and one aperture of the cock opens into each of the spaces in the cistern. The large division of the cistern is fitted with a pipe or pipes to deliver the house supply as required, and the small division has a syphon-trapped pipe leading into the drain and covered by a valve, the vertical rod of which is attached to the lever of the two-way delivery cock. The water from the main first fills the small division, the position of the lever being such that the valve at the lower part remains closed. The water then flows over the partition (which is kept a trifle lower than the sides of the cistern for this purpose) and fills the large division, the rising of the ball in which overcomes the pressure upon the valve in the small division, and lifts it suddenly to such a height as to permit of a rapid discharge of water through the syphon-trapped pipe into the drain." A modification of this plan, adapted to a filtering rain-water cistern would be advantageous in many respects. Such a cistern would be a valuable auxiliary to houses where the supply of water is maintained on the intermittent system. Not the least disadvantage of this defective plan of supplying houses with water, is the loss sustained by the water running over the cistern through the waste pipes; this is estimated in a certain district of London to be no less a quantity than 29 gallons per house, and this at each delivery. The supply of water to towns will never be on a proper footing till these wasteful appendages to cisterns shall be set aside, by the use of the system of constant supply at high service. One advantage to be derived from such a mode of supply, independently of the saving of material and time, will be the ready means which every house may have within itself of extinguishing accidental fires. Nothing will be easier than to have recesses in the wall at the different landings of the staircase, and in passages, or in corners of the houses, having doors easily opened and *comeatable*, in which may be coiled lengths of flexible hose, attached to a water crane, connected with a pipe led down the inside of the wall. Or small and very handsome cabinets may be placed in each apartment (fixtures of course), in which may be placed hose connected with a water-pipe: by opening the crane attached to these, a powerful stream of water may be directed to the burning mass wherever situated. These contrivances may be smiled at by some, as being Utopian in their character, mayhap stigmatised as trifling—nevertheless, if the term of threescore years and ten are to be allotted us, we shall certainly see these, or similar contrivances, adopted in every well-regulated house; unless, indeed, houses are hereafter, and that speedily too, constructed on such scientific principles as to render such preventive measures unnecessary.*

WHAT IS "RESTORATION OF BUILDINGS?"

It is rebuilding the whole or part, or redecorating and beautifying them. If then the church (for we will confine ourselves to churches), or any part of it, has already been destroyed, or is too ruinous to be used in safety, this is a necessary and laudable work. Or if the ornaments, carvings, or paintings are worn off, and are no longer beautiful, it is a very praiseworthy, though not so necessary a work. For our churches must be sound; they must not have even the appearance of neglect; and they must also be beautiful—as beautiful as we can make them,

In these cases, then, this work is good; and this being willingly granted, it may seem foolish to find fault with the name, but I am confident that this name does really mislead and cause incalculable injury. It must, therefore, be opposed.

Let it then be remembered, though it is of course a mere truism, that everything we make now, whether for ornament or use, whatever pattern or style, or design, it be of, is new. It may be correct or incorrect, beautiful or ugly, strong or weak—but it is new. It may have been put in the place of something old—it may even have been put over and upon the old—it may be an exact *fac-simile* of the old—or it may be put where no work of art ever was before; but in every case it is equally new. It is no matter whether it be a whole church or a chancel, or one pier or a capital, or even a single leaf or flower in it; if it is made now it is a new work. Why, then, call it a restoration? The name is false. There is nothing restored. Something original is taken away, or has decayed and fallen, and something new is inserted in its place. Renovation is the proper name for the operation. But no one would allow a church to be renovated. An outcry (and a most just and worthy one too) would be immediately raised against it. It is just what we are blaming our ancestors for. But under this specious name of restoration, clergymen, architects, and builders are permitted to knock to pieces, or scrape off the walls, carvings and paintings, which, strange to say, they themselves are all the while praising as of surpassing beauty. So far the process is exactly what the churchwardens of the last century might have done, the original decorations which have stood for centuries are irreparably lost, and the fragments thrown away. The next step may seem to be entirely different in the two cases, but it is not really. The space being cleared, the churchwardens (before mentioned) placed a kind of sign-painting, representing Moses and Aaron, or the King's arms, or else perhaps it was a great piece of stonework, covered with cupids and inverted torches, and heathen deities, to the memory of the great man of the place. The restorer of to-day puts an elaborate piece of stone tracery, or creeping stems of foliage, or else a full-size picture of St. Christopher, carrying the infant Saviour, in which all the mistakes and some of the beauties of the old picture are copied with wonderful accuracy. In both cases, the new work is supposed to be more beautiful, or in

* To be continued.

some sense better, than the old; and no doubt it is so in the judgment of those who erect it. But may they not be mistaken? With regard to the decorations of the last century, every one at once answers, "Yes;" and there is no doubt of the fact.

But may not the restorer be mistaken in his judgment also? in his estimate of the comparative beauty of the old half-worn work and his own new sharply cut carvings? It is possible he may be mistaken. He may not be able to believe this: no, nor any of his friends and associates either; but the next generation may judge differently, and, comparing his work, not with that which it replaced—that is destroyed,—but with others of the same age, it may perhaps condemn him as much as we now condemn our fathers.

I am now only considering the matter as a comparison of beauty: in this light, then, it is a thing to be decided by careful comparison and examination, by persons of proper taste, which is the most beautiful. Now, the most that we can do is to obtain the judgment of the present age upon this matter. This will not of course be unanimous, but still I suppose the general judgment of the age may be arrived at if pains are taken.

But even then the question arises, is this judgment correct? Let us not be too certain. We can see in many ages past an utter inability to appreciate various works of art; let us not be too certain we are right.

The restorer unfortunately does not think of this at all; for he is under the pleasing delusion, that because his work is of the same style and pattern as what he destroyed, and even, as he believes, the exact fac-simile of what that was when it was first put up, it is not a new piece of work at all. He cannot, therefore, see that there is any comparison to be made at all. Other persons, however, are not so deluded; they can see that the new doorway of the Temple Church, for example, is no more the same as the old one than the Hampton-court cartoons would be if some painter, no matter whether an R.A. or the most tasteless dauber, were to wash off the faces on them and repaint them himself.

The comparison, however, must be made, and we must not let any specious name of restoration, or any feeling of veneration, or any false kindness towards those who, at great personal sacrifice, perhaps, and with great labour, have made the change, hinder us from boldly forming our opinion, and carefully trying to arrive at a true judgment. And if we find that, to the best of our judgment, the new work is not so beautiful as the old, we must diligently set ourselves to prevent such an alteration in future—such a robbery, I might say, for though of course unintentional, such it really seems, as much as if a person were to come into my house and wilfully break to pieces a marble chimney-piece, and replace it by a stone one; or smash a beautiful vase of coloured Bohemian glass, and replace it by a plain earthenware one.

Considering the question, then, as one of merely comparative beauty, we cannot be so sure that the renovated works of our age (I will not call them restored) are more beautiful than those which they have replaced. However, in making the comparison in any churches that the reader may know, one thing must be observed: we must, before we begin to compare, remove from the churches every thing which does not belong to the Middle Ages—every thing inserted after the beginning of the sixteenth century; for the exceptions are so rare, we do not mind passing a sweeping condemnation upon all these works; all the rest is to remain untouched. It is, therefore, with the old churches so far abstracted, that we are to compare the present renovations.

The comparison in such cases is certainly a difficult one to make fairly with regard to the whole buildings, for in the one case every thing is new, sharp, shining, and of one design; in the other, old works are mixed with the disfigurements caused by removing; but these places should be filled up with new work of such a kind as least to attract notice, or at any rate not to draw off the attention from the others. However, let the comparison at any rate be attempted; let it be remembered that the new is new, and the old, old; and let us judge as we usually do in cases of comparative beauty and merit: it will not be universally found that the new is the most beautiful.

I think, then, we can easily agree to this, that the remains of mediæval art in our churches (supposing them to be not ruinous) are not to be removed and replaced by our own productions unless these latter are actually more beautiful than the old.

But the very stating of this will convince every one that it does not go half far enough. Just apply it to the paintings in the National Gallery. Who would dare to make such a proposition? "That the 'Raising of Lazarus,' or Murillo's 'Holy Family,' is not to be destroyed or repainted with something new, unless we can be sure the new painting will be more beautiful." Why, we do not even let any one clean the dirt off them for fear of washing down some little fragments of colouring. We should say to a person who offered to do any thing of that sort,—"If you think you can paint a picture, either a copy or an original design, as beautiful as these, do it by all means: we will value it, and thank you too for your pains. But there is plenty of canvas to be had, and plenty of room to hang your pictures in, or if not we will make room. But as for our old pictures we will not part with them; we know their beauty, and as, long as by any means possible, they can be held together, no one shall dare to touch them."

Why is not the same reasoning to apply to churches? "Because," perhaps, "they are not meant for the preservation of curiosities." No more is a gallery of paintings: it is meant for nourishing a love and perception of beauty in the soul. When a picture is so far worn away as no longer to be beautiful, then perhaps it should be removed into a museum of curiosities, and its place supplied by one that is beautiful. And surely the same rule may apply to the works of sacred art in churches. If the carvings on the capitals or bosses, or the paintings on the walls, or any other of the ornaments of the original church are worn so smooth as no longer to be beautiful, or to retain a trace, a legible and visible trace, of their meaning, then let them be removed, but not till then. Let them be removed into a museum, and preserved as curiosities; or even if they are entirely destroyed we will not care, for perishable works cannot be made to last for ever.

Is not, then, this a reasonable conclusion that as long as any piece of architecture is really beautiful it ought to be preserved? To destroy it or to remake it is an actual abolition of a beautiful thing.

This will not tend to quench ecclesiastical art; it will only preserve to us those models from which we have learnt it, and from which the next generations will learn it much better than from our copies, however good we may think them.

But those whose minds are filled with an idea of beauty, whose hands are eager to work it out, or who are wishing to patronize art, and to adorn churches, will find plenty of opportunity and plenty of space for all they can do. There are hundreds of new churches building and to be built, which will need their care. Or in the old churches there is plenty of room for their generous works without first removing those of former ages. Perhaps the new will not seem to accord well with the old, but that is an evil which every year will diminish, and, at any rate, both will be beautiful, and it is certainly better than having all new.

SERVATOR.

MASONRY AND STONE-CUTTING IN FRANCE.

DURING the last five months I have paid particular attention to the works going on at an addition to the *Palais de Justice* now being erected in Paris. Unlike our tedious and expensive manner, the French merely shape the stone to the rough contour of the mouldings previously to setting, as wood is prepared by carpenters for the moulding plane; this meets the contingencies incidental to hoisting and other movements, the value of the material being very little increased by the labour expended on it. It also gives the facility of applying the building to its intended purpose in a much shorter time, and, in the case of a paucity of funds, of finishing the more expensive dressings at a future period. Many of the buildings in Paris which to the eye of a casual observer are completed, still demand the expenditure of large sums for the finishing sculptures.

When the entire façade of a building is carried up to the blocking course of the crowning entablature, the dressing is commenced, and is finished in stages, generally beginning at the top. The first operation is performed with a hammer, the face of which is indented by deep lines crossing each other at right angles, thus forming a series of teeth; with this instrument the workman strikes evenly over the surface of the stone. Sometimes a sharp-edged hammer is used, cutting the surface by an oblique blow. Afterwards a scrape in the form of a veneering hammer is applied, and the ashlaring is finished.

For the moulded and sunk work the usual cutting tools are used, and, in addition, a series of rebate-planes, having the irons set to a high pitch. It is astonishing with what rapidity they finish entablatures of the most difficult description. Other advantages are also derived from this method,—for instance, mitres, raking and circular mouldings, panelled soffits, and every description of foliated work, can be executed with the highest degree of accuracy and perfection.

M. M.

DESCRIPTION OF NEW ROMAN CATHOLIC CHURCH AT SHEFFIELD: ST. MARIE'S.

THIS building, recently dedicated, occupies nearly half the north side of Norfolk-row, Sheffield. The first stone was laid on the 25th March, 1847. It is a cross church, in the Decorated style, and has a tower and spire at the south-west corner. The dimensions are as follow:—

		Ft.	In.
The total internal length from the east to the west wall within		143	7
The chancel being	long 38	2	
The nave being	long 105	5	
The breadth of the nave is		24	8
The breadth of the aisles is — north		18	0
The breadth of the aisles is — south		17	0
The greatest breadth across the transepts is		82	8
Nave from floor to ridge		51	10
Chancel from floor to ridge		48	4
The tower is, up to the parapet	high 92	3	
The spire is, up to the cross	high 95	4	
And the cross and vane is	high 8	1	
Total height		195	8

It contains 1,000 seats.

The *Sheffield Times* gives a long description of the building, from which we learn, amongst other things, that the chancel is fitted up with great splendour, and presents a reredos and altar, a rood-screen and loft, sedilia, founder's tomb, with effigy and hearse, stone and metal parcloses, oak stalls, with poppy-heads and panellings, a richly-inlaid floor, and over all a richly-decorated roof. The altar, built up of fair hewn stone, supports, detached from the eastern wall, the tabernacle. The door is of enamelled metal, set amidst enriched mouldings and panelling, whilst on either side are minute statuettes of angels, "harping on their harps." In the eastern wall is the reredos. The centre is panelled in geometric panelling to the extent of the altar; and then at either end in four sunk panels, two in each, are eight images of angels bearing representations of the instruments and emblems of the Passion. Beneath these figures are small quatrefoils, with the sculptured vine, and an open cresting and cornice form the upper line of the dossal beneath the east window. In the panes of this window, "richly dight," are depicted the principal events of the life of the Virgin Mary, the patroness of the church.

The baptistry is raised by an ascent of three steps above the level of the nave, and stands beneath the tower. In the centre of the baptistry stands the font; it is of an octagonal form, borne up by a cluster of shafts with caps and bases, and an arrangement of angels below the bowl holding books. The eight sides of the bowl of the font are sunk in square panels, and contain sculptures of the seven sacraments and the Crucifixion.

The parties associated in the erection of the edifice under the direction of Messrs. Weightman and Hadfield, the architects, are:—

Contractor for the building and masons' work, Mr. Gregory; for the carpenters' work, Mr. Hayball. The decoration of the chancel-

roof, screen, &c., was from the designs of Mr. Bulmer, of Sheffield. The reredos and high altar, founder's effigy, and font, are from the workshops of Mr. Myers. The western window was carried out by Messrs. Hardman and Co., of Birmingham, and is, with the altar and reredos, from the designs of Mr. Pugin. All the other coloured windows are executed by Mr. Wailes; the great east window and two others being designed by Mr. G. Goldie. The stone carvings, with the exception mentioned above, are by Mr. Charles James; the wood carvings, with some exceptions, by Mr. Arthur Hayhall. The tiles of the chancel and chapels are from the works of Minton and Co., and the metal screens, coronæ of lights, &c., were executed by Mr. Ellis, of Sheffield.

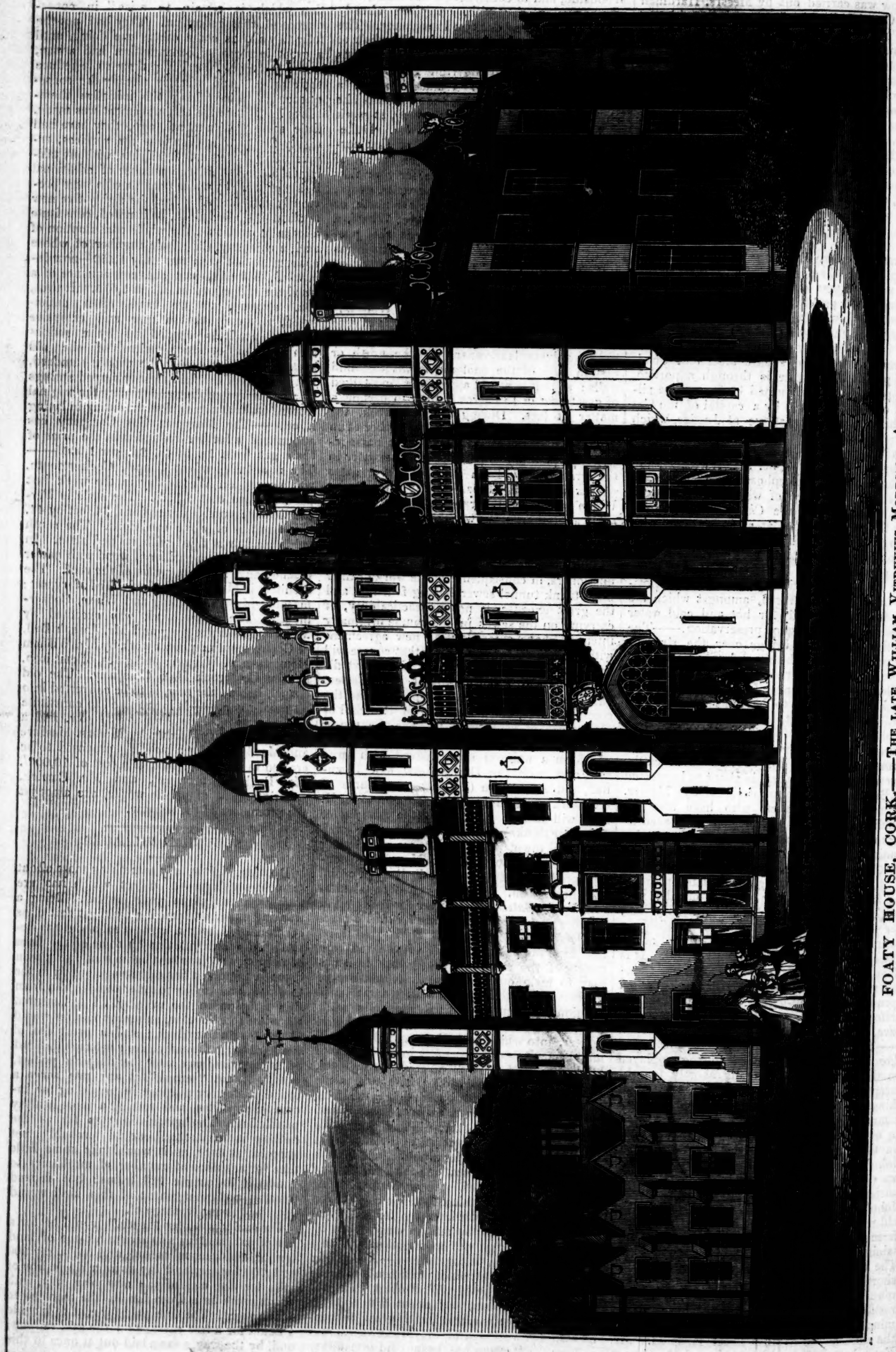
NOTES IN THE PROVINCES.

THE new Corn Exchange at Ipswich is now completed. The dimensions are 66 feet by 77, area nearly 5,000 square feet, and capable of seating 1,000 people. Besides a lantern roof of sixteen windows, there are on each side eight larger ones, making a total of thirty-two. The roof is supported by six cast-iron pillars. The pavement consists of square blocks of wood. The principal entrance is through a portico. The pediment is supported by four stone pillars, each surmounted by a capital of the Corinthian order. The statue of Justice, which formerly surmounted the market-cross on the Cornhill, has been placed upon the apex of the pediment, despoiled of her scales, weights, and bandage, and metamorphosed into Ceres, with her sickle and bunch of wheat. It is alleged, on all hands, says the *Chelmsford Chronicle*, that the portico is not at all in harmony with the rest of the building. The architect is Mr. Woolnough: the builder Mr. Ribbans.——The excavations, by the Hon. Captain Neville, near Hadstock, continue, and several curiosities have been recovered, amongst which are two baths, apparently for hot and cold water respectively, and in good preservation.——The erection of a new bridge over the river at March has been subscribed for and arranged through the instrumentality of Mr. Charles Culledge.——A chancel for a new church at Hockerill is about to be built on a plan by Mr. G. E. Prickett, of Bishop's Stortford, architect.——A site is being selected for a new church at Balsall-heath, Birmingham.——A permanent building for exhibitions of cattle, sheep, pigs, and poultry, is about to be erected at Birmingham, from designs by Messrs. Branson and Gwyther, who have also the building contract. Mr. S. Hemming, according to the local *Journal*, is appointed superintending architect. The cost is not to exceed 5,000*l*.——The subscription for the restoration of St. Martin's, Birmingham, is still progressing favourably.——The church of the new district of Donnington Wood, near Lilleshall, was consecrated by the Bishop of Lichfield on Thursday last. The edifice was erected at the sole charge of the Duke of Sutherland. It is of stone, in the pointed style, and has chancel, nave, and transepts, with high-pitched open roof, and bell-gable. All the sittings are uniform and free; and, with gallery at end of nave, the edifice accommodates 600 people.——The prisons at Dartmoor are now being thoroughly repaired; 150 men being employed on them to get them ready shortly for the reception of convicts, who, amongst other things, will, we believe, be made to relieve the community of the burden of supporting them, by employment in producing their own food on the land adjoining.——The vestry of St. John's, Bristol, in restoring the parish church, are very desirous of preserving from decay the ancient gateway of St. John's, known as St. John's archway, and through which was the old northern entrance to the city. They have formed a committee of citizens, in hope of obtaining extra-parochial aid for the work. The contributions promised are nearly 200*l*. short of the sum required.——Some of the munificent merchants, and others, of Bristol, resident chiefly at Redcliffe, have determined to enlarge the building and increase the efficiency of Guinea-street Hospital. Mr. Eaton has contributed 5,000*l*., and Mr. George Thomas 1,000*l*. It is proposed that the future structure shall be erected in a more prominent situation than Guinea-street, so that it should be, as one of the great public buildings, an ornament to the city.——The Birkenhead Dock trustees are about to erect sundry walls against the river Mersey, from Seacombe to Woodside, and to construct certain dams, &c., in connection therewith, on plans already prepared by the dockyard engineer. The greatest possible activity pervades the whole of this important undertaking. From the terminus of the Morpeth and Egerton Docks—mere passage-docks—up to Wallasey-bridge, a distance of nearly two miles, the ground is like a bee-hive, covered with human bees, at work in building walls, excavating, &c. Duke-street Wharf forms the boundary of that portion of the great float which is on the eve of being opened, comprising some forty or fifty acres of dock space, bounded by walls, quays, &c., which are also building on the north, or Seacombe side. Above Duke-street Wharf, a temporary dam is thrown across the pool whilst the upper walls are building. This forms a new contract, and the work is proceeding rapidly; whilst Mr. Bailey and Mr. Tyrer are building their walls to complete the whole extent from Woodside-basin to Wallasey-bridge, a line of wharf walls upwards of two miles in extent; and, simultaneously with these works, private landowners on the north or eastern side of the pool are about to build walls; so that it would appear the long-talked of great float of 150 acres is soon to become a matter of fact. During the past week, the Morpeth and Egerton Docks have been run dry, in order to put in the 70-feet passage-gates, preparatory to penning up the water in the great float. Each half of these gates weighs some eighty tons.——The West Derby Union guardians, Liverpool, are about to make some alterations in the workhouse at Mill-lane, Everton, on plans prepared by Mr. M. A. B. Clayton, of Everton Village, architect.——At Bury, Lancashire, the Improvement Commissioners, in consequence of the work of their main trunk tunnel sewer having fallen in, and the great expense, if not impracticability, of carrying on the sewer in the course originally intended, have entered into a new agreement with the contractor, by which that course will be diverted. The Paving Committee have directed the pavement from top of Bolton-street past Old Market-place to be repaved; and the commissioners, at the expense of the Earl of Derby, are at same time to pave the top of Market-street. When completed, the whole will form a uniform space, paved with large sets, and, with the Derby Hotel, new Town-hall, and Athenæum (the latter in course of erection), and the intended monument to Sir R. Peel, will form a *coup d'œil* (the *Manchester Spectator* thinks) not easily matched in a small provincial town. But perhaps we are sharing some little odium with our Manchester contemporary in presuming to call Bury a small provincial town. We have just been taken to task by the *Gateshead Observer* for speaking of "rather a stylish sort of edifice for *such a place as Darlington*," seeing that Darlington is no less than the political centre of the southern moiety of the county of Durham. It is not easy to mete out to all that exact measure of importance to which circumstance and relative position may entitle them—especially while lost, ourselves, in a wilderness of brick and mortar, into which both Bury and Darlington might be pitched like needles into a bundle of hay. We have just discovered a new town, by the way, something like Darlington, in the midst of the wilderness, but doubtless the latter is still in its former place, and as politically and locally important as ever.——The attempt to unite the proposed memorial to Sir R. Peel at Leeds with the project for a public hall appears to be a failure, as not one-third (6,460*l*.) of the necessary sum has been subscribed. The inhabitants seem to think that the corporation should erect a public building for municipal and other purposes by rate, as empowered by their Act, and that the memorial should be a separate erection altogether.——About six weeks ago, a new street of workmen's cottages was commenced by Mr. W. Stobart, in a field at Monkwearmouth, and about fifty cottages have been already erected, and great part inhabited by workmen of the Monkwearmouth colliery. Attention has been paid to sanitary regulations in the building of these dwellings, according to a local paper, and a large number of cottages on a similar plan are to be built in the same district of the town (Sunderland).——The Corporation Gas Company at Sunderland made the reduction of price to 3s., lately announced, in the full expectation of "a great increase of consumption which is certain to arise" in consequence of that reduction. They had not the folly to wait, as some others are doing, until a great increase of consumption had arisen, under pretence of enabling them so to reduce their price. And what is already the consequence of thus taking the initiative themselves? "Since the announcement was made, little more than a month ago, they have had eighty-five new applications for services, representing more than 300 lights, without taking into account a large number of additional lights ordered by those persons who were previously consumers." And the eighty-five new applications alluded to, be it noted, constitute a large proportion of the whole consumption of such a company, the whole number of whose consumers last year was only 1,450—now increased, however, partly in consequence of a previous reduction, in all to 1,675. It thus, too, appears, as we have often anticipated, not only that a new and extensive field of profit is opened up by a reduction of the ordinary prices of the old system to a point nearer the proper standard, but that out of the field already reaped springs up a new crop doubling and tripling the original returns without any equivalent outlay in laying it on.——The Maryport Gas Company has announced a further reduction in the price of their gas from 5s. to 4s. 2d. per 1,000.——The new Independent Chapel, Cockermouth, was opened on Wednesday in the week just past. It has cost 1,700*l*. The style is Perpendicular; outside dimensions, 74 feet by 44. The front is of white sandstone. The south gable window is filled with stained glass. In the interior a large gasilier of wood with papier maché hangs from the centre of the roof. The architect is Mr. Chas. Eaglesfield, of Maryport; masons, Messrs. Fleming and White, Cockermouth. The joiner work was executed by Mr. Thomas Armstrong and Mr. Joseph Bell, of Cockermouth; plaster work by Mr. William Henderson, of Wigton; and gates, of cast iron, by the Coalbrook Dale Company. The old chapel, behind the new, is to be converted into a school-room.——It is proposed to constitute an Institute of Fine Arts at Glasgow, and a design has been published by Messrs. Maclure and Macdonald for a building proposed to be erected in George-square, at a cost of 10,000*l*. Mr. Rochead, architect, and Mr. Carrick, superintendent of public works, are amongst the promoters of the scheme.

SUBURBAN VILLAGES.

DO, Mr. Editor, say something more about suburban villages—a subject which has ere now been treated in your journal. Being a working man, and moving amongst that class continually, I hear a great deal about the desirability of early trains on some of the lines of railway, that for a small sum would set a man down in London a few minutes before six in the morning, and in like manner remove him from this Babylon in the evening. I feel assured that were this the case, suburban villages would grow up of themselves,; and a great deal of the hard-earned money of our artizans, instead of finding its way into the doctor's pocket, would, if not "saved," at any rate serve a more satisfactory purpose in providing for increased appetites, and rearing a more healthy population. The speculation (as far as the railway is concerned) would probably not succeed at once, as it would take some little time for a sufficient number of mechanics to "move," to ensure full trains: but depend upon it an arrangement of this kind would soon be taken advantage of.

Probably a better "spec." would be for a few of our capitalists to secure a piece of land ten or a dozen miles out, and build, say 800 or 1,000 houses, and lay down a single line of rails for the use of the new town only, with trains every hour from five in the morning to ten at night. The sum paid for rent to include a ticket for a free passage on the said railway; and, by the way, a town laid out at once in this way would form a rare opportunity for what is now so much needed—perfect sanitary arrangements, water supply, &c. J.



FOATY HOUSE, CORK.—THE LATE WILLIAM VITRUVIUS MORRISON, ARCHITECT.

ANCIENT WROUGHT STEEL LOCK.

FOATY HOUSE, CORK.

Foaty House, in the vicinity of the city of Cork, and of which we give a representation, was built, from designs by the late William Vitruvius Morrison, for the late John Smith Barry, Esq., a gentleman who succeeded to the extensive property of the late Lord Barrymore, his (*reputed*) father, by the will of that nobleman. It is in the mixed style known as Elizabethan, a style which, as we understand, was first introduced into Ireland by Mr. Morrison, who had studied its peculiarities in England. He erected in the same style Kilruddery Hall, Wicklow, for the Earl of Meath; Hollybrooke, Wicklow, for Sir George Hodson, Bart.; Bonis House, Carlow, for Walter Kavenagh, Esq.; Clontarfe Castle, Dublin, for J. Vernon, Esq., &c.

Foaty House covers a large area, and is well planned. The principal floor includes a drawing-room 22 feet by 32 feet, library 22 feet by 32 feet, with octagon boudoir 14 feet in diameter at the end of it, and dining-room 40 feet by 22 feet, all *en suite*. The entrance-doorway seen in the engraving opens into a vestibule 18 feet by 20 feet, and thence into the Great Hall 18 feet by 31 feet, with staircase 21 feet 6 inches by 18 feet.

Mr. W. V. Morrison, who died in October, 1838, at the early age of forty-four, was the son of the late Sir Richard Morrison, and was for some time in partnership with his father. If we may judge, however, from a memoir of Mr. Morrison in Weale's "Quarterly Papers on Architecture," written by his brother, Mr. John Morrison, A. B., and some other statements made by that gentleman in efforts to do justice to his brother's abilities, Sir Richard sought rather to keep down than to extend his son's reputation.

Mr. Morrison laboured during the whole of his short life under almost continued ill-health, but nevertheless executed a large number of extensive structures.

MEDIÆVAL IRONWORK.

The illustration represents a fine specimen of a Gothic lock, in wrought steel, of a rich, florid design. Under a canopy is the Crucifixion, and, on pressing the top of the cross, the lower panel, which contains a figure of St. James, falls, and exhibits the keyhole.

ELECTRO-TELEGRAPHIC PROGRESS.

It appears that all objections to gutta percha as the sole or outer covering of the submarine telegraph between Dover and Calais will be obviated; as, from want of sufficient strength and weight to resist accidents, "the electric wire, thin as a lady's staylace in itself, will now be encased either in a 5 or a 10-inch cable of the diameter of those that placed the Britannia tubes in position, and these will be submerged by the aid of enormous weights. The wire will be imbedded in this gigantic coil or cable, composed of what is called whipped plait with wire rope, all of it chymically prepared, so as to protect it from rot, and kyanised; the whole to be chained down, as it were, as the rails are on a railway, by the gravitation of the huge weights in the bottom of the sea." This is certainly a more hopeful looking apparatus for such a destination than the comparatively frail and tender cord which has already been unsuccessfully tried. There are two species of mechanical obstacles to be overcome by the new apparatus: the one of these, as we long since anticipated, will be the dragging of anchors throughout the channel: the other will be the lash of the terminal waves near the shores. Both of these, we presume, have been considered in the determination come to. There are some arrangements, however, still to be made with the French Government before a continuous line of telegraph from London to Paris can be effected. In short, the throwing of the gutta percha pipe across the channel appears to have been but a temporary and premature *ruse* or scheme to enable the parties to the undertaking to hold on by the French Government's conditions, one of which made it a *sine qua non* that electric communication was to be established or shown to be possible by a certain date, and it is perhaps questionable whether there was any serious intention to regard the line so thrown across as a permanent one.——Captain Warner of "long range" celebrity, is another claimant, it appears, of the original idea of this telegraph, which, as alleged, he submitted to the Admiralty, along with that of the transatlantic one, six years since.——The idea of running submarine wires along coasts and rivers, and through ports and harbours, has been revived: and it is intended to throw one across the Mersey, between Liverpool and Birkenhead, to begin with.——The cost of transmitting despatches between New York and Boston by telegraph is now reduced to two cents (one penny) for each word. The distance exceeds 200 miles.

RAILWAY JOTTINGS.

The Liverpool and Southport Company have purchased one of the promising light locomotives of Messrs. England, of Hatcham Iron-works. A Liverpool paper, in speaking of the advantages of these handy little engines, says, "In the first place, the present engine cost only 1,200*l.*; an ordinary locomotive would be twice that amount. Then this swallows only 8½ lbs. of coke per mile, whilst the larger engines require 29 lbs. Again, the wear and tear is less, and being lighter on the rails, it is natural that the adoption of small fire-steeds like this will have a tendency to diminish that heavy and continual item in some railway accounts for 'maintenance of way.' One peculiarity of the new invention, and from which some of its economy results, is that by means of what has hitherto been regarded the waste steam, the water is heated before it is put into the boiler.—But enough of promise. What as to performance? 'What speed can you go at?' we inquired of Mr. England. 'We can run as fast as you like!' was his illimitable reply. 'We will run you down at the rate of a mile a minute!' and we may say that the promise was almost literally kept. The distance from Waterloo to Southport is rather over thirteen miles, which was accomplished yesterday in sixteen minutes. The engine did a heavy day's work. The whole traffic devolved upon it, and it carried yesterday backward and forward ten trains, traversing, in doing so, 130 miles. Messrs. England's engines are now employed on three railways—the Edinburgh and Glasgow, the Dundee and Perth, and the London and Blackwall."——The advantages of advertising were curiously shown, at the last meeting of the Railway Passengers' Assurance Company, by Mr. Lee Stevens, who stated that in November last the average weekly receipts were 72*l.* The result of greater publicity being given was, that in February, 1850, the average weekly receipts had increased to 112*l.* In March, the directors materially reduced the advertisements, and the average income fell to 94*l.* 13*s.* a week, in April to 74*l.* 5*s.*, and in May they had fallen to 56*l.*, while in June they were only 42*l.* a week. During that period he had urged the directors to advertise more extensively in vain, but in June they became alarmed—he wondered they were not so sooner,—and they commenced a more liberal system of advertising. The result, according to the returns furnished him by the secretary, was that since they returned to the old system the average weekly receipts, for July, had increased from 42*l.* to 61*l.*; and for the first three weeks of August, the time to which the last returns were made up, the weekly income had risen to 68*l.* He believed that if the former policy had been steadily carried out, they would now have had an income of 250*l.* a week."——We perceive by the way from the long line of excursion advertisements in the daily papers of the present week, that the companies are taking the hint afforded them by recent experience. "The railway excursions projected to take place in all parts of the kingdom," says the *Morning Herald*, "are unprecedented. Nearly every railway company has projected pleasure trips for the middle and working classes, and the result has been to create a comparatively new species of traffic."

The *Times*, which, with other of the daily papers, had previously quoted our remarks of last week on this subject, states that "large as was the concourse of persons who availed themselves of the cheap excursion to Bath and Bristol on Sunday week, it was far exceeded by the numbers who did so on Sunday last. The number conveyed by the three trains on Sunday must have amounted to between 5,000 and 6,000 persons, and the profit netted by the company in consequence very considerable. We observe that the excursion is already announced to be repeated on Sunday next." In complete accordance with the results of other trials of low fares, we find it stated in the directors' report to be presented next week to the North British shareholders, that "the short traffic in the vicinity of Edinburgh, which has been much competed for by coaches, has all along been a source of anxiety to the directors; and they recently resolved to attempt to improve it by a large reduction of fares, and by running a few extra trains, during the summer months, to and from Portobello. The result has been most satisfactory, inasmuch as, during the short time the experiment has been going on, the revenue has increased upwards of 56 per cent. over the corresponding period of last year; while the number of passengers has been multiplied nearly fourfold, without any material addition being made to the expense of working."——An experiment is making by the Midland Railway Company to carry first-class passengers at one penny per mile, and second-class at a halfpenny. So far it is said to have proved very satisfactory, and if it continue it will be tried between Derby and Nottingham. Success there will then cause a further trial.——Penny omnibuses have commenced running between the South-Eastern Railway and the Bank.

PASSAGE OF WATER THROUGH PIPES.*

My attention having been drawn to an article in the last BUILDER, with the above heading, I hasten to give a return of the working of a six-inch pipe, of the diameter referred to by "Baylis." The pipe was employed under the following circumstances. A tract of land, sixty acres in extent, had to be thoroughly drained with drains 30 feet apart, and 4 to 6 feet in depth. This land was comparatively level, but situate at the mouth of a ravine, at the base of an elevated and extensive range of hills; and though the stream or torrent from this precipitous catchment intersected the land to be drained, it was not considered advisable, or even possible, to adopt it as a main drain, because, like all mountain rivers, it deposited boulders and gravel at each flood; and as it was requisite to unwater the lower part of the lands when the river was carried under the junction of two public roads, at a level inadequate to discharge deep drainage water, Doulton's 6-inch glazed stoneware pipe was laid through the arch under the bed of the river, and continued straight down stream to avoid elbows. It was laid with much care, with an inclination of 1 in 200, the joints set with Roman cement diluted with hot water, and securely coated under and about with good well-puddled clay. The fall of rain in the locality referred to is 36·03 inches per annum, and by some has been estimated at 40·20 inches; besides which, there were four strong springs outcropping from higher lands, and in one place a slight percolation from the intersecting river to parallel minor drains. The limits of this communication will not permit me to enter into the calculations which guided me in the dimensions of this conduit. The result has been satisfactory, and I give you the facts, as, to the practical man, one fact is worth a thousand arguments. Your correspondent must, however, observe, that the water discharged was filtered through broken stone, and held little, if any, matter in suspension.

T. B.

VENTILATION OF ST. GEORGE'S HALL, LIVERPOOL.—Dr. Reid is about to make experiments with a view of testing the best mode of ventilating St. George's Hall. By an arrangement with the council, he will be employed during a space of two months.

* Results of some experiments on this subject are in type.

APPROPRIATION OF RAILWAY ARCHES.

A CORRESPONDENT, "F. S.," has forwarded to us a suggestion that accommodation might be provided for hundreds of destitute beings by fitting up the arches of railways that terminate in London and other crowded cities, seemingly unaware that the idea was started in our pages long ago, and led to the establishment of a society to effect the desired object. To what extent the society has operated we do not know. The correspondent in question says justly—"These arches are at present perfectly useless, except in reference to the railway of which they form a part, but by *enclosing the sides, constructing one floor*, and *forming a passage longitudinally*, an excellent shelter from the storm and cold might be formed; mere stalls and straw pallets and a plentiful supply of water would be all the internal fitting required, and the most complete ventilation might be effected by luffer boarding at the top of each apartment, while the cleanliness of the lodgings might be imposed on those who occupied them.

A trifling outlay might effect all this, and houses be provided for the houseless poor (without the cost or time of erection) who, for the want of properly regulated establishments, infest the low lodging-houses of our city, where vice in her most repulsive form dwells, and where the children of misery and crime exist and hide themselves, unvisited by the pure air and sunlight of heaven. Beneath the arches of our railways the poorest beggar may at least enjoy uncontaminated *atmosphere* and uninterrupted *light* in addition to an effectual shelter from the inclemency of the weather. It would be far from advisable that asylums such as these should not be under the direction and guidance of regular inspectors or overseers; on the contrary, they should be most strictly and carefully managed, in order to prevent them being abused or degenerating into the same hotbeds of villany that the low and miserable lodging-houses are now.

Would not places such as these tend greatly to the diminution of crime, inasmuch as an immense number of the poorest class, and these, it may be, of a dissolute character, would be removed from temptation of many kinds that naturally occurs to those who, from necessity, wander about without a roof to cover them?"

ON HOOPING RAILWAY ARCHES.

DURING the construction of the viaducts for railways in this country, many disastrous accidents have occurred by the falling of part of the arches, which has generally happened at the time of the centres being struck. The cause of these disasters it has not been difficult to ascertain, and is to be traced mainly to a more than usual continuance of wet weather during or immediately after the construction. The arches in question being usually constructed of brickwork, or of stones of small dimensions, occasioning a great multitude of joints, a proportionally large quantity of mortar has of necessity to be used in filling these joints. An unusual quantity of rain falling would naturally prevent the mortar from setting; and the mortar being thus kept in a kind of semi-fluid state, a small inequality of pressure in the different parts of the arch would be sufficient to bring the whole to destruction.

As a remedy for the disasters here spoken of, we are induced to propose the following plan:—As soon as an arch is completed, a series of hoops, formed of strip-iron, are to be laid over the exterior surface at equal distances, extending from pier to pier. Each hoop is to be composed of two pieces of equal length, each part extending from the crown of the arch along to the exterior surface, or extrados, and then across the piers to the springing of the adjoining arches on both sides, where they are to be turned up, in order to obtain a sufficient hold on the brickwork. It being supposed that all the arches are hooped in the same way, the hoops of the adjoining arches will in like manner proceed across the piers in the contrary direction, to the springing of the arch of which we are more particularly speaking, where they are to be turned up as before. The hoops of the adjoining arches are to be so arranged that the turned-up ends of the ranges of hoops (extending over the whole viaduct) may just pass alongside each other, and the space between the turned ends being firmly built up with brickwork, on the hoops being tightened they will mutually draw against each other. At the crown of the arches, the two parts of the hoops are coupled together by means of screw bolts: these should not be less than three in number, in order that a bolt may be exchanged without inconvenience, in case it should be required. These ends of the hoops are turned up, and strengthened with angle-pieces, in order more effectually to withstand the pressure of the screw bolts. The two ends should not approach each other within nine or ten inches in the first instance, in order to afford room for the closing up of the ends when the bolts are screwed up. A thin piece of sheet-iron is put under the two ends, betwixt the iron and the brickwork of the arch, in order to facilitate the sliding of the hoop on the arch when undergoing the process of tightening. At the extremities of the viaduct, the ends of the last hoops will require to be secured by being carried to a sufficient depth in the brickwork.

In a viaduct 30 feet wide, five or six ranges of hoops placed across the arch, at equal distances, will be sufficient. These may be made of strip iron, 9 inches wide × $\frac{1}{16}$ of an inch thick. If five are employed, the total breaking weight of the whole will be nearly double the gross weight of one of the arches to which they are applied—that is, supposing the arches to be about 35 feet span. The object of the hooping being to counteract the inequality of pressure, or want of balance in the different parts of the arches, and as this difference of pressure can only be a very small fraction of the total weight of one of them, therefore the strength of iron given above will be more than amply sufficient for the purpose intended. The piers being raised to the height of the crowns of the arches, and the arches filled up at the haunches to the same level, the screw bolts at the different crowns are to be tightened. The arches are to be left in this state till it is judged that the mortar is sufficiently set, when the centres are to be eased as in due course. On this being done, the screw bolts at the different crowns are to be again tightened, in order to follow up as the arches settle. Every thing about the arches appearing secure, the centres may now be removed, and the hoops will prevent any alteration taking place in the shape of the arches.

When the viaduct is completed, the hooping will of course, be completely concealed in the interior of the brickwork.

JOHN POTTER.*

BREAKING WEIGHT OF RED PINE.

YOU will oblige me by inserting the following constants, which may be of service to those using my tables, and who may, for the same quality of timber, adopt the standard of strength deduced from the experiments upon American red pine balks, given from Mr. Clark's work in last week's BUILDER:—

"Mean of two experiments upon American red pine, 12 × 12 and 15 feet long, clear bearing. Breaking weight, suspended from the middle, 14 tons, or 280 cwts.

'The strength $S = \frac{280}{115{\cdot}2 \times 4} \times 1344 = 816{\cdot}6$'

The strength, depth, and breadth of any species of timber of the assumed standard strength 1344 being 1·00; then for the strength 816·6, we have as follows:—

Table of Constants No. 1, p. 2, in Lea's Tables.

Relative strength	·6076 col.	I.
Depth to have the same strength .	1·283 ,,	II.
Breadth to have the same strength	1·646 ,,	III.

Table of Constants No. 2, p. 50—Second Series.

Weight uniformly loaded.

Factor to give the breaking weight.....	4·861 col.	I.
Reciprocal of the same	·2057 ,,	II.

Weight suspended from the middle.

† Factor to give the breaking weight.....	2·430 ,,	III.
Reciprocal of the same.....	·4115 ,,	IV.

Table of Constants No. 3, p. 96—Third Series.

Factor to give the depth and breadth to have the same strength	1·181 col.	I.

WILLIAM LEA.

AT MADRID a new grand Italian Opera House, built at the expense of the state, to be called "Teatro del Oriente," is about to be opened.—*Literary Gazette.*

* From the *Engineer and Machinist*.

† The tabular weight for the scantling, in the second series of the above-named tables, multiplied by 2·43, gives the breaking weight suspended from the middle, for the strength 816·6.

At page 76 of the tables, the tabular weight for 12×12 and 15 feet long is 115·2 cwts.

115·2×2·43=279·94 cwts., the breaking weight suspended from the middle.

Books.

School Builder's Guide, and School Furniture Pattern Book. By the Rev. CHARLES RICHSON, M.A. London: Darton and Co. 1850.

All who have to design, build, or conduct parochial and national schools will find Mr. Richson's pamphlet of much use. It is divided into three parts, the school fabric, the school fixtures, and the school furniture, and contains many illustrations, including a design for schools, by Messrs. Holdens. The author properly points out that it is bad economy to attempt to save the expense of an architect in erecting school buildings.

Miscellanea.

ARCHITECTS' REQUIREMENTS:—CAST-IRON.—Mr. Fairbairn, in a report on the cause of failure of the mill at Stockport, mentioned in our pages a short time since, made the following remarks, which are eminently worthy of attention:—Cast-iron may be said to be of almost universal application at the present time, in the construction of buildings. Its use is, at all events, very extended; and the repeated occurrence of lamentable accidents, which have hurried numbers to their graves without the means of escape, or a single moment's reflection, evidences a deplorable want of knowledge of its general properties amongst those who undertake the designing and erection of buildings, and seems to call for the interference of the strong arm of the law, or, at least, for the supervision of some higher authority than now exists, to enforce obedience to those well-established principles and facts which point out a way to its perfectly secure adaptation, when duly and accurately proportioned to the duties it may be called upon to perform. No material is of greater value in all the requirements of building, machinery, and the constructive arts generally; and, when employed under the directions of men of knowledge and judgment, it fully establishes its claim to be reckoned amongst the most valuable mineral productions of the country. On the other hand, when its application is undertaken by, or entrusted to the management of, the unthinking and ill-informed, who possess no knowledge of, or have not taken the trouble to make themselves acquainted with, its cohesive strength and powers of resistance, it becomes in such hands a most dangerous enemy, instead of a useful and powerful auxiliary. The following qualifications appear to me necessary to the successful pursuit of his profession by the practical architect and engineer:—Firstly, a knowledge of the strength and other properties of the materials which he employs; secondly, the skill necessary to distribute and proportion the parts in such form as will insure the maximum of strength, with the minimum of material; and, lastly, in the use of cast-iron and other metals, an acquaintance with the laws of expansion and contraction, in order that he might be enabled, in every construction which requires strength, and in the security of which the safety of the public is involved, to reckon with certainty upon the calculated or estimated duty of each particular casting.

STATE OF BLACKFRIARS BRIDGE.—In a letter from Mr. J. Walker, of the firm of Walker and Burge, to the comptroller of Bridge House Estates, ostensibly, though not very clearly, showing that there is no reason for alarm, or for stopping the traffic along Blackfriars Bridge, we find it stated, that between 26th June and 24th August, there has been a sinking of one inch in fifth pier from Middlesex side. That, from 24th August to date of letter, namely, 13th inst., there has been no further sinking. That the sinking has arisen from the bed of the river being lowered by the current of the tide and the wash of steamboats, so as to be 6 feet under the tops of the piles that inclose the pier (the former level of the bed of the river), and that the stoppage to the sinking is to be ascribed to the stone and other heavy material (upwards of 3,000 tons), which, during the last two months, have been thrown in to restore the level; and also to the repairs which have been done to the paving and piling of the foundation by the diving-bell.

INTERNATIONAL EXHIBITION.—The returns of space required by Manchester exhibitors show that 570 square feet of flooring, 940 feet of counter, and 4,595 feet of wall room, could be filled by manufactures; while 10,536 feet of floor, 303 of counter, and 408 of wall room, were demanded for machinery; and for sundries 16 feet of floor, 197 of counter, and 290 of wall room. The total space placed at the disposal of the Manchester committee was 10,000 feet; and of this 7,662 feet had already been allotted to works of an engineering and mechanical character. The greatest height required for machinery was 40 feet, and for manufactures 15 feet.——The Bolton Committee have issued an address to the local workmen, in which they say—"It is almost certain that every intelligent mechanic and artizan, anxious to improve himself in his particular trade, and advance his position in society, will not fail to visit the 'Industrial Works of all Nations.' Because—At a trifling expense of time and money he may leisurely examine the raw materials and manufactured products of the whole globe, which hitherto the very wealthy only have been able to see, and that by an immense expenditure in travelling. Because—He can compare the various materials and products with each other, discover which of the former are best suited to the uses of his trade, avoid the errors and imitate the excellences of the latter. Because—He can in numerous instances see the tools, machines, and means employed in, and the designs, patterns, and combinations of other arts, which may be advantageously adapted to his own. Because—If he neglect to avail himself of the advantages offered, he will be in a worse position than his fellow-workmen who embrace them. The exhibition will thus injure him if he refuse to benefit by it. Because—In many branches he will find that in one way or another the foreigner excels him, but he may also discover how he is excelled, and, knowing this, he will take care not to be surpassed at a second exhibition." For the excursion it is calculated eight days' time and 4*l.* in money are required; but no doubt the visit may be made for less money and in less time. The Committee recommend a small weekly saving till September, 1851, for the purpose. The general committee have issued regulations connected with a register of lodgings for workmen while in London.——The Society of Arts have issued a notice relative to their proposed prizes for a series of treatises relating to the exhibition.

NEW SCOTTISH NATIONAL GALLERY.—Messrs. Ackerman have recently published a tinted lithograph, showing the intended National Gallery and the Royal Institution at Edinburgh, in connection with the Free Church College and the Castle. The intended building (designed by Mr. Playfair) is Ionic, with two tetrastyle porticoes at each end, and a hexastyle portico in the centre of each side. The intermediate portions present simply a range of antæ, with balustrade.

ESTIMATING.—I send you tenders for erecting the carcases of sixty-two fourth-rate houses at Holloway, for Messrs. Overton and Hughes. Mr. Thos. Tatlock, architect. The quantities were furnished by Mr. Tatlock, at a charge of 2 per cent.:—

Haswell	£5,497
Barcley	5,290
Craber	5,225
Roddo	5,201
Rees	4,950
Emmins	4,916
Smith	4,859
Treharne	4,857
Symons	4,700
Salter	4,600
Tear	4,492
Hocken	4,200

It consisted of upwards of 278 rods of brickwork, ornamental coloured brick facings, dressings, &c.; Caen stone copings, cills, and dressings; glazed tubular drains of best construction; 1,726 ft. cube of fir bond and plates; 6,950 cubic feet of fir framed; 325 squares of best Bangor Duchess slating; Williams's patent, 2½-inch roll ridges and hips, with oil cement; ½-inch slab slate soffits, &c. All to be completed by the end of November next. The contractor to be bound with the "usual" facility, and to find two sureties of 500*l.* each that he fulfils his bond.—SURVEYOR.

SURVEY OF BIRMINGHAM.—At a meeting of the guardians held last week, the testimonials of the eight selected candidates were read. According to the *Birmingham Journal*, it was stated by the chairman that he had computed the sums on each assessment, which were as follows:—Mr. Robertson, whose estimate was 948*l.*, was at the rate of 6d. each assessment; Mr. Dyke, 850*l.*, rather less than 6d.; Messrs. Leversage and Corfield, 700*l.*, about 5d.; Mr. Thompson, jun., 500*l.*, very little more than 3d.; Messrs. Hebbert and Faucit, 1,050*l.*, a little more than 6d.; Mr. J. D. Paine, 945*l.*, about 6d.; Mr. I. Newey, 1,445*l.*, at 9d.; and Mr. P. Gannon, 1,450*l.*, at 9d. The chairman further intimated that it had been communicated to him that the commissioners had instructed their surveyor, Mr. Piggott Smith, to make a complete survey and map of the town, which would show every detail, and which would be placed at the service of the parish, so that they would not require a map for the parish.—After the testimonials had been read, it was, on the motion of Mr. Turner, seconded by Mr. Hartle, agreed that the tenders of Messrs. Leversage and Corfield, Mr. J. D. Paine, and Mr. Isaac Newey, be reserved for farther consideration, and that these gentlemen be requested to attend the Board on Wednesday, the 18th. It was also agreed that the travelling expenses of the gentlemen from a distance, if unsuccessful, should be liquidated.

THE NEW BIRMINGHAM WORKHOUSE.—The foundation-stone of this new structure was laid at Birmingham Heath on Monday in last week, on which occasion Mr. Glenn, the contractor, entertained his workman, 200 in number, with roast beef, plum-pudding, and half a day's pay.

BLOWING UP A CLIFF AT SEAFORD.—A grand explosion of 27,000lbs. of powder, by the voltaic spark, while stored in chambers cut into the cliff at Seaford, was to come off to-day (Thursday). The object in view is to arrest the encroachment of the sea, and prevent the beach from drifting. The martello tower, forts, and other property will thus, it is hoped, be saved from ultimate destruction. Government are to be the chief projectors of the cliff into the sea; inasmuch as, besides otherwise greatly assisting with the needful, they have allowed the Sappers and Miners to excavate and prepare the works. "The men," it is said, "like the work, and prefer it to being shut up in barracks and garrisons,"—a good hint to Government what to do with the waste power of the soldiery in the forwarding of other great public works that might never otherwise be undertaken, at the same time, also, strengthening the force physically and materially, instead of letting it run to waste. At Seaford the cliff has been penetrated from above by five shafts 41 feet each in depth, for a charge of 600 lbs. of gunpowder; and a gallery, 6 feet high and 5 feet wide, penetrates below from the face of the cliff to a length of 80 feet into its interior, with two smaller branch galleries 3 feet in height, each terminating in a chamber 6 feet 6 in. square in cubic measure and containing 12,000 lbs. of powder. Sir John Burgoyne has the management of the works, which are personally superintended by Captain Froome. The voltaic batteries are under charge of Mr. Ward.

ALTERATIONS IN ST. JAMES'S PARK.—To allay the apprehensions of those who properly look with great jealousy on any alterations which threaten to abridge the parks, we are able to state that the inclosing railing of the palace will be brought forward only to a trifling extent, and that, with this exception, the area enjoyable by the people will remain open as it is. The railing at the western end of the inclosure will be taken down, and an ornamental terrace-wall be substituted at some distance eastward, and in a line ranging with the front of the palace. The Mall will be widened on the south by a slip taken from the inclosure, so as to bring it into the centre of the palace front (if we understand rightly), and other dress-grounds will be formed on the north side of it to accord with the present inclosure. Trees will be *added* to the Mall.

ROYAL ACADEMY OF ARTS.—We understand that Mr. Jones, R.A., has resigned his appointment, so that on the 3rd of November there will be an election of a Keeper as well as of a President.

MANCHESTER WATER-WORKS.—It appears from the report of the Water-works Committee recently read before the council, that the amount expended on these extensive works down to 31st July last was 347,737*l.* odd, besides 5,902*l.* of interest paid on loans; since which time 10,900*l.* more have been paid to the contractors. The progress towards completion will be seen from the following statement:—Woodhead Reservoir: Messrs. Thompson and Sons. Amount of contract, 22,600*l.* Value of work done, 1850, August 16th, 14,568*l.* 14s. 4½d.; value of extra work done, 6,410*l.* 2s. 9d.—Hollinworth and Arnfield Reservoir: Mr. Samuel Taylor. Contract, 28,953*l.* 6s. 2d.; work done, 1850, August 30th, 11,839*l.* 19s. 11d.; extra, 1,881*l.* 11s. 7d.—Rhodes Wood and Torside Reservoirs: Mr. Geo. Merritt. Contract, 42,153*l.* 19s. 1½d.; work done, 1850, August 30th, 14,198*l.* 6s. 7½d.; extra, 3,737*l.* 6s. 1d.—Denton and Gorton Reservoirs: Mr. David Bellhouse. Contract, 17,917*l.* 16s. 1d.; work done, 1850, August 29th, 8,908*l.* 6s. 0½d.; extra, 542*l.* 15s. 7½d. —On the engineering works, exclusive of accommodation works for millowners, the original estimate, including enlarged mains, was 253,595*l.* 10s. The probable cost of these works, when quite completed, will be, it appears, 282,652*l.*, showing an excess over the estimates of 29,057*l.*, due chiefly to enlargements and improvements not originally contemplated, and to additional provision for floods. In November, 1848, the sub-committee determined to remunerate Mr. Bateman, their engineer, for the works done beyond the borough bounds, by a per centage on the estimated amount, which the engineer then stated at 207,861*l.*, exclusive of 10,000*l.* for extra size of pipes, suggested by Mr. Walker, on which he did not wish to claim per centage. Since that time it appears that alterations in the projected works must alter the estimate given in. The report was finally adopted by the council.

ON THE TENURE OF PROPERTY IN ENGLAND AND WALES.—The tenures under which land is held in this country have grown out of the feudal system, and have differed materially at different periods of our history. At present, landed property is of three sorts, freehold, copyhold, and leasehold: an estate belonging unconditionally to its owner, and held directly under the Crown, or rather under the law and constitution of the country, is said to be freehold. But freehold property may be liable to regular and fixed annual payments, provided it be not liable to fine, heriot, or forfeiture. Copyhold estates are held of a subject, as part of a royalty, honour, or manor, and are liable to fines on account of deaths, transfers, and other such circumstances, according to the customs of the royalty, honour, or manor of which they form a part. Leasehold property is of various descriptions, such as long leasehold, for a term of 1,000 years; life leasehold with a fine certain, or under certain limitations on renewal; life leasehold with a fine uncertain, payable to the proprietor or other superior; in this case, the latter reserves merely a conventional rent, the tenant having paid down a sum of money to obtain the lease, and the right of alienation; this practice is common in the west of England. There is another kind of leasehold, with an uncertain fine payable to the proprietor, who receives the full rent of the land at the time of granting the lease, the lessor having a power of alienation; this is a common practice in Wales, and some parts of England. The last, and not least, of the various kinds of leasehold, is where the property is held for an ordinary term, with the power of alienation. A lease, without the power of alienation or transfer, is not called a tenure: though it merely gives a right of occupancy for some specified period, it is practically one of the most important tenures, much of the prosperity of every country, of which any considerable portion belongs to extensive proprietors, depending on the conditions in such leases. G. J. R.

DISCOVERY AT ROCHESTER.—A correspondent informs us that, in pulling down some old houses near Rochester-bridge, the workmen have found a principal arch of St. Clement's Church; which church was shut up, and then taken down, in the year 1538, when the houses which are now being destroyed were built on the site. It is a pointed arch.

COLOGNE CATHEDRAL.—A correspondent of the *Athenæum* says:—"Two years have done much for the Cathedral at Cologne. In less than two years more, the traveller will be able from a distance to see that the huge gap betwixt the choir and the towers is essentially diminished. The walls and one of the windows of the transepts are all but up, the flying buttresses being still untouched. The upper windows of the nave are already defined; the sketched-out tower in the façade has a new pier, and the giddily-lofty arch which is to connect it with its twin sister has been thrown. The further, however, that these interesting works advance, the more do I feel confirmed in the idea which I ventured to express on my last visit, that betwixt the space of the transepts and the bulk of the towers the proportions of the nave shrink into a shortness which both outside and inside of the Cathedral will ultimately produce a disappointing effect. I spent a long Sunday morning in the building; and to judge from the crowds that filled it, and the cheery jingle of money on the offering-plates, popular sympathy and curiosity with regard to the fulfilment of 'this broken promise to God' (as poor Hood called it) have in no degree subsided. Some of us may live to see the entire area thrown open to the vaults of the roof."

AMERICAN IRON AND COPPER.—A great quantity of iron ore, yielding about ninety per cent. of pure iron, is reported to have been discovered on the Black River, Crawford county, Wisconsin, with abundance of timber for furnace fuel, and water-power at hand, as well as water-carriage.——That is nothing, however, to the advantages of the Cliff and Minesota copper-mines of Lake Superior, which are at present yielding immense quantities of native copper, in masses themselves immense, every piece weighing two tons or more, and requiring two teams to a waggon.

GREAT FIRE AT MONTREAL.—Another of those immense conflagrations, to which the timber-built houses of America, as elsewhere, so frequently give rise, has been scourging the town of Montreal. Five hundred thousand dollars' worth of property it is said have been destroyed. The fire consumed several streets in a very brief space of time, and a hundred houses were entirely destroyed, and many others made uninhabitable. A number of stone and brick houses were also involved in the general destruction.

NEW CHURCH AT WEYMOUTH, DORSET.—On the 11th inst. the foundation-stone of the new church, dedicated to St. John (to be built in the parish of Radipole), was laid by the Reverend Edmund Hollond, M.A., the patron of the united parishes of Melcombe Regis and Radipole. The site is at the end of the Esplanade, which is about half-a-mile in length, and to which the church will form an ornamental termination. The ceremony on the ground was numerously attended. The style of this church is to be Decorated, and the building will be executed with the Ridgway-hill stone, with Bath stone for the coins and traceried windows. It will contain 628 sittings, and have no gallery. The organ will be placed in the tower. The plan is similar in arrangement to that of Christ-church at Battersea. The dimensions of the nave are,—length, 75 feet; width, 22 feet. The chancel 27 feet by 18 feet. The aisles are 11 feet in width, and the transepts project 9 feet from the aisle walls. The tower is 19 feet square, and is placed at the north-west corner. The height to the top of the spire is 130 feet. The height of the nave to the ridge is 52 feet, and the chancel 44 feet. The architect is Mr. Talbot Bury, and the builder Mr. P. Dodson.

DOCK ENGINEERING AT NAPLES.—A letter, dated Naples, September 14, says:—"A very remarkable engineering blunder has caused the destruction of a dry dock built near the Molo of Naples, at an outlay of some 30,000*l.* Yesterday the whole fabric fell in, from the pressure of water, fortunately when no workmen were on the works. The blame is attributable to Prince Ischitella, the Minister of War. It appears the king had been warned by some Neapolitan engineers that the walls were too slight; and for some time past the works were pronounced as unsafe by more than one English gentleman, whose professional knowledge at once discovered the error."

ACOUSTIC ALTERATIONS IN EXETER HALL.—The alteration which is being made at Exeter Hall consists in forming a coved ceiling instead of a flat one, the new ceiling being 12 feet higher in the centre than the former one. This is being effected without disturbing the slating of the roof. Wrought-iron girders are being fixed to the sides of the present principals, and the tie-beams will then be removed. One of the iron girders is now in its place. We have not yet personally looked at the works, but shall do so shortly.

ASSOCIATE LABOUR CONFERENCE.—On Wednesday in last week, the "Conference of trades and other delegates," at Manchester, was opened, for consideration of the questions of co-operative and associative labour. About forty persons were present. Resolutions were unanimously passed at the public meeting, mainly "pledging itself to advance, by all moral means, the great principle of co-operative association," which latter, of course, must be carefully distinguished from Communism, with which it has no essential connection.

LEEDS SCHOOL OF DESIGN.—The directors of this useful establishment have been giving a free exhibition of drawings, models, statues, &c. The exhibition, says the local *Intelligencer*, gave abundant proof that the mode of teaching adopted ensures a mastery of principles, and that the range of study adapts the instruction of the school to persons engaged in every branch of art and manufacture.

METROPOLITAN INTERMENTS ACT.—A rate-payer states, in the *Times*, that the suburban parishes, finding themselves exempt from the operations of the new Act, have begun a system of jobbing in graveyards, some of the parishes having two already, and one going to add a third; so that, unless the commissioners can put a stop to it, our suburban villages will soon present the appearance of a complete net-work of petty parochial graveyards.

LONDON MECHANICS' INSTITUTION.—The members of this long-established institution held a conversazione on Wednesday evening, the 18th, when there was an exhibition of sculpture, specimens of manufactures, and models of machinery. A working model of the electric telegraph was shown in operation. The rooms were very crowded. The drawing class, the music class, and the elocution class lent their aid to afford amusement.

THE SEA-SERPENT A HYDRO-ELECTRIC MACHINE.—Some Irish correspondents of the press are amusing their readers, and themselves, it may be, with grave and wonderful details of that still equivocal monster of the deep, the "sea-sarpint." One of the most ingenious and feasible of these, if a mere invention, and if something more, certainly one of the most extraordinary, is a detail of particulars to the effect that the sea-serpent is no serpent after all, but a tremendous electrical eel, or other creature akin to the gymnotus, charging small fry which it happens to touch, electrically, as well as killing them by the contact. Another writer hints that as the eely tribe inhabit the mud at the bottom of ponds, so the natural habitat of this eel of eels must be the bottom of that "big pond," the Atlantic, the mud of which must be at present disturbed by some portentous geological movement.

PUBLIC CONVENIENCES.—There will of necessity, during the ensuing year, be an immense influx of foreigners from every part of the civilised globe: is there, therefore, no convincing the proper authorities of the evident necessity of erecting "public conveniences" in various crowded thoroughfares throughout London? The few already in the metropolis are in such secluded nooks and corners that none but those thoroughly conversant with our city can know where they are situated, and it is therefore hopeless to imagine that *strangers* will ever discover them. This, I know, is a very delicate matter to write about, but as your paper is so extensively circulated among those who will see the necessity of making a determined stir in the matter, I have ventured to address you. F. STENT.

*** This necessity has been urged again and again in our pages.

TENDERS

For a villa residence at Woodford Wells for Mr. Hallet, jun.; Mr. G. R. Noble, surveyor.

Thomas Burton	£1,959	0	0
Curtiss	1,892	0	0
William Still (accepted)	1,726	0	0

TO CORRESPONDENTS.

"T. B.," "F. J." (shall appear), "J. L. G.," "A Poor Inventor," "H. M. de la C." (we have not time to refer back), "E. R." (shall appear), "Crito" (too scurrilous), "W. S." (we cannot depart from our rule. We have had thirteen inquiries for addresses this week), "H. B." (vol. vii. p. 418), "S. W.," "Lapis," "C. W. O.," "J. V.," "J. L. K." (we are unable to recommend), "T. F. F.," "W. L. M." (declined with thanks), "J. J. D." (under our mark), "J. H.," "B.," "F. F.," "T. C.," "W. N.," "An Honest Builder," "J. J.," "W. H.," "Alpha" (a Parliamentary Paper), "W. H. T.," "A.," "Occasional Competitor."

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

THE ARCHITECTURAL EXHIBITION, at the Gallery, 53, Pall-mall, is now open to the public FREE, except on Saturdays, the admission then being One Shilling.
GEORGE TRUEFITT, } Hon. Secs.
JAMES K. COLLING, }

ROYAL POLYTECHNIC INSTITUTION.—LAST WEEK in LONDON of the ALPINE SINGERS FROM STYRIA, who perform several of their NATIONAL MELODIES, daily at Four, and in the Evenings at Half-past Eight.—Lecture on the Hydro-Electric Machine, by Dr. Bachhoffner, daily at Two, and in the evenings at a Quarter past Nine—Lecture on Chemistry, by J. H. Pepper, Esq., illustrating the Ancient Fiery Ordeal and the Handling of Red Hot Metals, daily at a Quarter past Three. and in the Evenings at Eight—Model of Weston's Patent Nova-Motive Railway at work daily—New Series of Dissolving Views, illustrating some of the Wonders of Nature, daily at Half-past Four, and in the evenings at a Quarter to Ten; also a Series exhibiting Scenes in the Arctic Regions and Ceylon, daily at One o'clock—Diver and Diving-bell, &c. &c.—Admission, 1s.; Schools, half-price.

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	£.	£. s. d.	£. s. d.
1806	2,500	79 10 10 extinguished.	1,222 9 0
1811	1,000	33 19 9 ditto	333 17 6
1818	1,000	34 16 10 ditto	114 18 10

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Policy No.	Date.	Sum Insured.	Bonuses added.	Total with additions to be further increased.
		£	£. s. d.	£. s. d.
521	1807	900	932 12 1	1,832 12 1
1174	1810	1,200	1,160 5 6	2,360 5 6
3392	1820	5,000	3,558 17 8	8,558 17 8

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One of these Mattresses, with a French Mattress on it, is a most excellent and soft bed. HEAL and SONS' List of Bedding, with full particulars of weights, sizes, and prices of every description of bedding, sent free by post.—HEAL and SON, Bedding Manufacturers, 196, opposite the Chapel, Tottenham-court-road.

A SUBSTITUTE for PAINT.—Cleanliness is necessarily at all times conducive to health, and this, as well as economy, is greatly promoted by substituting for the noxious process of painting with oil and white lead, STEPHENS'S DYES for STAINING WOOD, as a substitute for paint, for decorating churches, large public rooms, and theatres, as well as private dwellings. Every original invention, when becoming known and established, attracts a host of imitators, ready to seize upon and profit by another's ingenuity. So in the case of these Stains and Dyes, several imitators have sprung up; but the original inventor begs to assure the public that the time he has bestowed upon these articles to render them perfect ensures them against being disappointed in their use. His well-known experience in the preparation of colours enables him to effect the most perfect imitations of the various ornamental woods, while, at the same time, they reflect all the beauty of the natural grain.—The Dyes and Stains are prepared and sold by HENRY STEPHENS, 54, Stamford-street, Blackfriars-road, London, in bottles at 6d. and 1s. each, and 8s. per gallon.—The oak, mahogany, and satin-wood colours may be obtained in powder at 8s. per lb., which dissolves in water to form liquid, and 1 lb. will make one gallon of stain.—N.B. The trade supplied.—Sold at the Office of THE BUILDER, 2, York-street, Covent Garden, London; at both of which places may be had the proper varnish and size, with directions for its use.

BATH STONE OF BEST QUALITY.

RANDELL and SAUNDERS,
QUARRYMEN and STONE MERCHANTS,
BATH.

List of prices, also cost for transit to any part of the kingdom, furnished on application.

MARKET WHARF, REGENT'S-PARK BASIN.—MARTIN and WOOD solicit the attention of Builders, Masons, and others, to their stock of Portland, York, and Derby Stone; also Bangor Slates, Lime, Cement, Plaster, Bricks, Tiles, Laths, Fire-goods, Fire-stone, &c., sold at the lowest possible prices for Cash. Portland Head-stones, Ledgers, Steps, Landings, &c., cut to order on the shortest notice. Tarpaulings let on hire. A Stock of Northen's Drain Pipes, Syphons, &c., always on hand. Mortar, Lime and Hair, Fine Stuff, &c. Prompt attention paid to country orders.

BATH STONE.—RANDELL and SAUNDERS, Quarrymen, Bath, have appointed MARTIN and WOOD their sole agents in London. M. and W. beg to inform Architects, Masons, Builders, &c., that a large assortment of the much approved CORSHAM DOWN and other BATH STONE will always be kept at the Depot, opposite the Great Western Railway Station, Paddington. Orders will also be received at Market Wharf, Regent's-park Basin.

BATH and BOX WEATHER STONE.—HENRY STONE, QUARRYMAN and STONE MERCHANT, begs to inform Architects, Builders, and others, that he still continues to supply the best Combe Down and Ledge Stile Stone.—H. S. also begs to announce that he has opened two extensive quarries on Box-hill, from whence he is able to supply, to any extent, the best Ground Weather Stone on the most reasonable terms.—N.B. Ashler, Quoins, and Rangework cut to order.—6, St. Mark's-place, Widcombe, Bath.

BOX WEATHER STONE of best quality, SCALLETT BLOCK, &c. &c., supplied direct from the quarries, by THOS. STRONG, Quarry Proprietor and Stone Merchant, Box, Wilts.

The great durability of the Box Ground Stone, withstanding the most intense frost, renders it a desirable stone for all external building purposes. Orders to any extent immediately attended to.

Depôt, Box Station, Great Western Railway, where an extensive stock is always kept.

Plain and ornamental stonework prepared ready for fixing. Ashlar, Rangework, Walling-stones, &c., always on sale.

CAEN STONE, SELECTED FOR EXTERNAL WORKS.—LUARD, BEEDHAM and Co., Quarry Proprietors and Importers from Allemagne.

AUBIGNY STONE from the Quarries, near Falaise, Calvados Department.—Aubigny is of similar colour to Portland Stone, its texture finer, price and labour of working about the same.

RANVILLE STONE from Ranville Quarries, near Caen, Normandy.—Suitable for strong works, wharf and quay walling, price and labour similar to Caen Stone.—Depôt, Caen Sufferance Wharf, Rotherhithe.—Information and samples supplied from the Office, 18, Southwark-square, Borough.

CAEN STONE.—P. FOUCARD, Quai des Abattoirs, Caen (propriétaire des Carrières à Allemagne), offers CAEN STONE guaranteed from the first quarries at Allemagne, at 1s. 1d. per cubic foot, delivered to vessels or waggons (free of expense), from the depôt at the Whitby and Scotch Wharf, 14, Fore-street, Limehouse.—Contracts taken for any quantities.—Cargoes shipped to order, from Caen, to any part of the coast, on the same terms.—Apply to P. FOUCARD, at the Office, 39, Stoney-street, Borough Market; or to Mr. S. WEBSTER, at the Wharf.—Samples to be seen, and references to be had, at Mr. MARSH'S, No. 3, Charlotte-row, near the Mansion House.

STIRLING'S BELVEDERE SLATE WORKS, Belvedere-road, Lambeth.—A reduced list of prices of the best WELCH SLATE SLABS, planed both faces, will be sent on application (post paid) being made, and inclosing a postage stamp. The prices are under those advertised for inferior slates.

THE PIMLICO SLATE WORKS.—Patronized by Royalty, the Heads of the Nobility, the Clergy, Architects of Eminence, Builders, Railway Contractors, and the Public generally.—MAGNUS'S ENAMELLED SLATE (notwithstanding the vile imitations and infringements of his patent that are attempted) continues to grow in favour with the public, being handsomer, more durable, and very much cheaper than marble.—Price lists sent to any part of the kingdom gratis, and a book of drawings sent postage free on receipt of 3s. in postage stamps. Casterns, Filters, Dairy and Larder Shelves, Wine Cellar Fittings, Slabs, and every variety of plain Slate Work, at prices that defy competition.—49 and 50, Upper Belgrave-place.

BROCATELLO MARBLE.—A fine parcel of this rare and valuable marble has just been imported in blocks of advantageous sizes, and may be seen at the wharf, No. 17, Millbank-street, Westminster.

TO MASONS.

REDUCED PRICE of MARBLE SLAB.—The LONDON MARBLE AND STONE WORKING COMPANY continue to sell Slab, of superior quality and well sawn, at their Manufactory, ESHER-STREET, near Millbank, Westminster, at the following reduced prices, viz.:—

1 inch, at 1s. 2d. per foot.
1 inch, at 1s. 4d. "

SAMUEL CUNDY, Mason and Builder, PIMLICO MARBLE and STONE WORKS, Belgrave Wharf, Pimlico.

GOTHIC WINDOWS, ALTAR SCREENS, and other Works produced at a remarkably cheap rate.

FONTS from £5. upwards. Specimens on view of the Early English, Decorated, and Perpendicular styles.

ALTAR TABLETS Illuminated.

First-rate ARTISTS retained for SCULPTURED GOTHIC CARVINGS.

MEMORIAL CROSSES, MONUMENTS, TOMBS, HEADSTONES, &c., in great variety of design. Letters cut and complete for fixing in the country.

The Public are respectfully invited to view the carefully selected and manufactured Stock (by improved machinery) of Veined Marble Chimney-pieces—cheap and good.

DAIRIES fitted up with MARBLE or SLATE SHELVES.—MINTON'S Encaustic and White or Blue and White Porcelain Tiles in great variety of pattern.

A GOOD MARBLE CHIMNEY-PIECE FOR FORTY SHILLINGS.
A liberal discount to the trade.

PATENT MARBLE CHIMNEY-PIECES. Now ready and on SALE, a quantity of the above of various designs.—Builders and others requiring CHIMNEY-PIECES, will do well to inspect these Articles, which are far superior to slate, and not more than one-half the price usually charged for such things. They can be made on a short notice to any design, and at a price little more than is usually paid for the commonest description. Purchasers are requested to inspect them, and satisfy themselves. Price-list, and every information can be sent by post, if required. Warehouse, Bishop's Court, Old Bailey.

BLUE LIAS LIME, PLASTER, &c.

THOMAS FREEN and CO. having connected with their ROMAN CEMENT WORKS an extensive Manufactory of GROUND BLUE LIAS LIME and PLASTER of PARIS, beg to call the attention of Builders and others to the very superior quality of these articles, which they are prepared to supply upon the most reasonable terms.

WORKS—Tuscany Wharf, Regent's Canal, Kingsland-road, London.

DEPOTS—Lee's Wharf, Paddington; and Phœnix Wharf, Greenwich.

N.B. Grey and Chalk Lime, Paving Bricks, Tiles, Artificial Stone, Plasterers' Hair, &c. &c.

TO BUILDERS, CONTRACTORS, AND OTHERS.

GREAVES'S BLUE LIAS LIME and CEMENT, direct from the works, Stockton.—RUTTY and VEREY beg to inform the Trade that they continue to supply Blue Lias Lime and Cement as usual at No. 2, Wharf, Paddington, only. Also Glaze Drain Pipes.—N.B. No other lime kept at the wharf.

GREAVES'S BLUE LIAS LIME and CEMENT.—AGENTS.

Messrs. Freeman and Richardson, 6, South-wharf, Paddington.
Mr. T. Wylie ..... Liverpool.
Wm. and E. Knight ..... Manchester.
Mr. G. Brown ..... Glasgow.
Mr. J. Harrison ..... Chester.
Mr. E. Cryer ..... Oxford.
Gibbs, Cannings, and Co.'s Glazed Pipes, Bricks, &c.

GREY-STONE LIME.—HALL, Brothers, Merstham Lime Works, near Reigate, beg to offer to Builders and others a list of their prices for Cash on delivery.

Grey-Stone Lime	6s. 0d.	per Yard, or 22 Bushels.	
Ditto, for Manure	4s. 0d.	ditto	ditto
Ditto, Ashes	1s. 6d.	ditto	ditto
Black ditto	3s. 0d.	ditto	ditto

In not less than Six Yard quantities, and put on the Railway for all goods stations on the London and Brighton, and South-Eastern Railways, or lines connected with them. A fresh supply hot from the kilns daily, at the Bricklayers' Arms and Croydon Stations, and delivered to all parts.

Prices for Cash on delivery:—7s. per yard at the stations or works; 8s. per yard delivered within five miles; in not less than 2-yard quantities. Booking, 2s. per yard; 1s. per yard off if paid monthly. Collecting charged for. The Quality is warranted to be the Best.—Address, Merstham, near Reigate, Croydon; or Youl's-place, Old Kent-road.

BELL'S PATENT LIQUID CEMENT is ready for use, and only one-eighth the cost of oil-paint. For beauty it is pre-eminent, giving the exact appearance of FINE CUT STONE. Can be used at once on fresh Roman Cement, or any other plastering, and will protect the walls as well as Roman Cement. In casks of 1, 2, and 3 cwt., at 8s. 15s. and 21s., casks inclusive.

PATENT MINERAL PAINTS.

Invaluable for cheapness, beauty, and permanence: not half the cost of other paints, always ready for use, will keep good for years, and therefore well suited for exportation. Brilliant black, 2s.; rich browns, 2s. 9d.; greens and light colours, 4s. per gallon.

G. BELL and Co., 2, Wellington-street, Goswell-street.

ATKINSON'S CEMENT.—This Cement has hitherto been manufactured in Yorkshire, and, through long detention at sea, has often proved stale and unfit for use on its arrival in London. By the arrangement now made, the Cement will be manufactured in London, and thus presented to consumers in a fresh and genuine state, by the sole Agents, J. B. WHITE and SONS, Millbank-street, Westminster.

KEENE'S and PARIAN CEMENTS, for internal stucco, are employed very advantageously in place of wood for skirtings, architraves, and panel mouldings, and for in-door flooring, instead of stone. The peculiar properties of PARIAN Cement allow of its being painted or papered upon within a few hours of its application, and thus render it an important substitute for common plastering in those cases where expedition and beauty of finish are essential.—J. B. WHITE and SONS, Millbank-street, Westminster, Patentees of KEENE'S Cement, Licensees of PARIAN Cement.

PORTLAND CEMENT, as manufactured by J. B. WHITE and SONS, possesses all the properties of the best Roman Cement, but has the advantage over that material of wholly resisting frost. When used as a stucco it does not vegetate or turn green in damp situations, and requires no colouring. Employed as an hydraulic mortar for brickwork, it carries four to five measures of sand to one of cement, and is proved by trial to become harder and stronger in these proportions than Roman Cement with but one measure of sand. This superior connecting power, combined with its eminently hydraulic properties, point it out as the fittest material for building sea and embankment walls, the lining of reservoirs, cisterns, and baths, and for all those purposes where strength and a perfect resistance to water are required.

Manufacturers—J. B. WHITE and SONS, Millbank-street, Westminster, and 36, Seel-street, Liverpool.

PORTLAND CEMENT, solely MANUFACTURED by WILLIAM ASPDIN, Son of the Patentee.—Messrs. ROBINS, ASPDIN, and Co. request reference to No. 266, page 491; and also Nos. 284 and 285, pages 343 and 351 of "The Builder," for accounts of EXPERIMENTS on the strength of Portland Cements, whereby the great superiority of their Cement is manifest. This Cement has been proved for upwards of twenty years in the Thames Tunnel to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also at their Depôt, 46, Hanover-street, Liverpool.

THE PARIAN CEMENT, for INTERNAL STUCCO, which you supplied at Messrs. J. & B. MORLEY'S warehouses and dwelling in Wood-street, Gresham-street, in the City, has been used throughout the premises, in every story; altogether about ten thousand yards superficial, chiefly upon recently built walls, and a small portion upon timber partitions, and that with the most perfect and satisfactory result. I feel it also necessary to observe, that the plasterers' work was almost invariably followed up on the next day by the painters, thereby enabling me to have the buildings complete in the shortest possible time, both for business and for the occupation of the establishment. I am, therefore, of opinion, that the use of this new material is a most valuable feature in building operations, and fully justifies that which I was given to understand, viz., that it was an extraordinary material. I think it right to mention that I am at the present time having a great extent of similar work executed at another range of buildings, where time and the quality of the work are of the utmost importance.

(Signed) JNO. WALLEN, Architect, London.

To Messrs. Chas. Francis and Sons, Manufacturers, Nine Elms.

MARTIN'S PATENT
FIRE-PROOF AND ORNAMENTAL CEMENT,
APPLICABLE FOR
ALL INTERNAL PURPOSES WHERE PLASTERING IS REQUIRED.

This invaluable Cement has now been before the public so many years, and obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. Messrs. STEVENS and SON however feel called upon to observe, that from the greater extent of surface which a given quantity of MARTIN'S will cover, as compared with other Cements for internal use, there will be found a gain of 16½ per cent. in material, full 7 per cent. less in price, with an additional saving in labour of 10 per cent., by its allowing about forty minutes for working, being less than one-tenth of the time of other cements of a similar nature, therefore worked with greater facility, making together the enormous saving of full THIRTY-THREE PER CENT.; its advantages therefore cannot admit of doubt. Specimens, showing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement, in any quantity, obtained of Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.—Manufactory, Derwent Mill, Derby.

N.B. This Cement will receive paint or paper in a few hours after the completion of the work by the plasterers.

JOHNS and Co.'s PATENT PERMANENT STUCCO WASH, CEMENT, and PAINT.—The attention of the trade and the public generally is solicited to these very excellent and well-known materials, which, for their beauty, durability, imperviousness, and cheapness, are unequalled. THE PERMANENT WASH, as a substitute for common lime-wash or water-colour, is an article which has long been wanting for stucco and brick-work; it is of a stone colour, but may be tinted to any other; is perfectly dry in twenty-four hours; will not wash off; is very little dearer than the common washes; and, being a non-absorbent, is admirably adapted for railway stations, union workhouses, schools, barracks, prisons, &c. One cwt. is sufficient to cover, with two coats, 250 square yards. THE CEMENT, from the great reduction in price, and its suitableness for internal as well as external surfaces, places it above all other materials of its kind; it has no caustic qualities; may be painted or papered in a few days; never blisters, cracks, or vegetates; soon becomes as hard as stone; and may be cleaned with a brush and water. The merits of the PAINT are well known for its application to stucco work of all kinds, and external work generally. Numerous testimonials, prospectuses, and every information may be obtained, on application to the Sole Agent, PHILIP HARE, at the Warehouse, 22, Steel-yard, Upper Thames-street. A liberal allowance to wholesale dealers.

THE PATENT ARCHITECTURAL ROOFING TILES are strongly recommended as an improved system of roofing, and, from their extremely light and elegant appearance, are peculiarly adapted for covering Churches, Parsonage-houses, Schools, Ornamental and other Villas. A material feature of these Tiles is their economy; they are as cheap as ordinary slating, and do not require stronger timbers. Every information may be obtained by application to the Secretary, at the Offices, No. 158, Strand, where specimens of the Tiles may be seen.

WARD and Co., HONDURAS WHARF, BANKSIDE, and JAMAICA COFFEE-HOUSE, CORNHILL, LONDON.

Fire Bricks, best, 65s. per thousand; Stock Bricks, 27s.; Country Pan Tiles, 50s.; Plain, 33s. 6d.; 12 and 9 in. Flooring ditto, very bright and red, Paving, Crown, and Circular Fire Bricks, Stourbridge, Newcastle, and Welsh Bricks; ditto Lumps, Tiles, Shield-guards, Pattern-goods; Clay, Loam, &c. of the best sort, and cheaper than any other house; Sand Ballast; Sanitary Pipes; Dutch and English Clinkers; Suffolk Facings, White and Red; Patent Malting Tiles, &c. Shipments to all parts of the world.

TO CONTRACTORS, BRICK MERCHANTS, BUILDERS, AND OTHERS.

MR. L. DAVIS having finished his make of BRICKS for this year, is about to make large alterations and extension in his fields, and is prepared to enter into CONTRACTS FOR ANY QUANTITY, not exceeding Twenty Millions, for the next year. L. D., in thanking the public for the large share of patronage he is receiving, solicits an inspection of his bricks, as, from his not allowing them to be sorted, it will be found his stocks at 24s. will make excellent face work, and many paving and sewer work; only two prices being made, viz. 18s. place, 24s. stock, and although it may be novel, it will be found to work well. Plumstead-road Brickfields are within a quarter of a mile of the river, free watergate, and may be put on board barges for 3s. per thousand, including all charges.—Offices, Powis-street, Woolwich.

BRICKS.—In consequence of the low price at which Brickmakers have, for some time past, been purchasing Ashes and Breeze, H. DODD is enabled to offer his bricks, which are of good quality, at the following low prices; and as his fields are only a quarter of an hour's walk from the City, H. D. earnestly requests purchasers will favour him with a visit, in order to inspect his stock and to judge for themselves.

Marle Cutters.....	80s.	per thousand.
Yellow Seconds.....	52s. 6d.	"
Pale Seconds	50s.	"
Paviors	43s.	"
Pickings	38s.	"

Marle Place, Half-washed Stocks, and Place Bricks, at equally low prices. These bricks are sound, well burnt, and unusually free from defects; a very large proportion of the Stocks being suitable for external facing. They will be delivered at the above prices anywhere within two miles of the fields.

Apply to HENRY DODD and Co., at the Counting-house, Hoxton Brickfields, Grange-walk, near the Rosemary Branch, Hoxton.

N.B. Red Pit Sand, of approved quality, constantly on sale, upon reasonable terms. In the erection of walls, where it is desirable that the work should be kept as free from damp as possible, this sand, from its not containing any saline matter, is acknowledged to be preferable to river sand.

PAVING, 2s. 9d. PER SQUARE YARD. Basements, Foot-walks, Malt-houses, Corn Stores, Floors or Warehouses, and every description of Pavement laid down at the above low price, and the work guaranteed.—Apply to JOHN PILKINGTON, POLONCEAU'S BITUMEN PAVEMENT OFFICE, 14, JOHN-STREET, ADELPHI.—N.B. Country Agents and Railway Engineers and Contractors supplied with the best bitumen for covering bridges and arches.

LIGHT, CHEAP, and DURABLE ROOFING.—CROGGON'S Patent Asphalte Roofing Felt, and inodorous Felt for damp walls, sold in rolls 32 inches wide, 1d. per square foot: also Dry Hair Felt, for preventing the radiation of heat, and deadening sound; and sheathing for ships' bottoms, on which the copper lies smooth. Samples, directions, and testimonials sent by post.—CROGGON and Co., 2, Dowgate-hill.

MODERN VENETIAN STUCCO,
Also manufactured only by
Messrs. ORSI and ARMANI.

The Modern Venetian Stucco is applicable to all external and internal purposes of Buildings, such as WALLS, CEILINGS, SKIRTINGS, FLOORING, MOULDINGS of every description, and also for COATING METAL of all KINDS, by which a high inimitable Polish is obtained, coupled with its preservation.

SAMPLES LAY FOR INSPECTION. List of Prices, and every Particular, may be obtained at the Office, 6, Guildhall-Chambers, Basinghall-street, City; and at the Office of "The Builder."

IMPORTANT TO OIL AND RAILWAY GREASE MERCHANTS AND FACTORS.

FOR SALE, at the Works at Weymouth, or may be delivered to any part of the kingdom, the superior product by distillation of BITUMINOUS SCHALE, or SCHISTUS. "LIQUID BITUMEN," containing, 1st, a Volatile Oil, or Mineral Spirit; 2nd, an Oil of a greater density; 3rd, a Fatty Mineral Oil; 4th, Paraffine; 5th, Grease, slightly alkaline; 6th, Tar. The Volatile Oil, or Mineral Spirit, is admirably adapted as a solvent, and may be used for all purposes to which the most highly rectified spirit of turpentine is employed, or may be used for spirit and camphine lamps. The second oil, not so very volatile, will dissolve in any proportion with seed or fish oils, of which it considerably augments their illuminating power, and prevents their becoming rancid. The third is admirably adapted for lubricating machinery, and contains—the 4th, Paraffine, which is easily obtained by crystallization, and requiring but little treatment to make excellent candles. The 5th, Grease, superior to animal oil or fat for the use of carriages. The 6th, Tar, perfectly black, very siccative, and which may be used generally for all purposes of varnish, and where mineral tar is employed.—Any further information may be obtained either of Mr. W. C. HOMERSHAM, Schiste Works, Weymouth; or of Mr. C. F. CHEFFINS, 11, Southampton-buildings, Chancery-lane, London.

REVOLVING SAFETY WOOD AND IRON SHUTTERS.—SNOXELL, Patentee, 92, Regent-street, and at his steam-works, 135, Old-street. These shutters have fully borne out their superiority over other revolving shutters for security, durability, and simplicity. References can be given to noblemen whose mansions are fitted herewith, and numerous large establishments, where some are fixed measuring upwards of 400 square feet in one shutter, and which are opened and closed in a few moments with the greatest possible ease, without the use of machinery. The Patentee manufactures Brass Sash Bars, Steel Board Plates, &c.